COMPUTERWORLD

Users warm to license outsourcing

Resellers fill gap with new programs

By William Brandel

Wayne Pattison is a happy man. While many of his peers struggle to manage compliance with the many software licensing schemes on the market, he has few worries.

That is because Pattison, the director of data center operations at the Kansas City Southern Railway Co., has unloaded the monitoring, reporting and maintenance of the railroad's software licenses to a third-party reseller.

"We've done it for six months, and it has been very successful," Pattison said. "I don't really know if it has saved us money, but I do know that it is very convenient. And that's what this is all about: convenience."

Strange bedfellows
By outsourcing license management caretaking to resellers and other third parties, users and vendors are finally finding common ground on an issue that usually has them at loggerheads. This is **License management,** *page 16*

The OOP SURVIVAL GUIDE

Once you acquire the technical skills to develop object-oriented programs, you have to master the mind-set needed to help you make the most of this emerging technology. Here's a 12-step survival guide. IN DEPTH, PAGE 89

Few mourn DOS decline

Upgrades made moot by newer systems, customers say

By Stuart J. Johnston

The apparent impending demise of MS-DOS may just trigger a New Orleans-style send-off, with users dancing all the way to the graveyard.

In recent interviews, Microsoft Corp. executives said they doubt there will be much demand for any further updates of DOS once Chicago, which will not require DOS, ships next year. Chicago is the next release of Windows.

At least one other purveyor of DOS — Novell, Inc. — may have seen the writing on the wall. The company is widely rumored to be nearing a decision to cut its losses and phase out Novell DOS. However, a spokeswoman for the Provo, Utah-based firm refused to confirm or deny the reports.

And despite statements by IBM officials that this will leave them an opening in the operating

> **Sales of DOS applications** in the first quarter of 1994 plunged 34% from a year earlier to $303 million, according to a recent report by the Software Publishers Association. At the same time, sales of Windows applications jumped 43% to $899 million.

systems arena, via the company's PC DOS offering, an informal survey of both large and small users shows that Microsoft may be right.

For example, even though nearly a third of Stone Container Corp.'s 3,000-plus PCs still run only DOS, "I'm not sure I'd be complaining" if Microsoft does not release further upgrades, said Ki Wilson, a senior microcomputer analyst at the Chicago firm. "The [current DOS] 6.2 feature set is pretty compelling," he added.

Windows dominates
"I don't think that would be a real large issue for us. We've implemented standards that the base desktop machines will all have Windows," said Michael Schaeffer, LAN support team leader for Amoco's Chicago campus.

"I don't think we care about MS-DOS 7.0 [be-
DOS, *page 117*

Powersoft catches user flak

By Melinda-Carol Ballou

Powersoft Corp. would do well to stabilize the current version of its PowerBuilder 3.0 client/server development tools before touting the capabilities of its upcoming Release 4.0, according to a number of frustrated developers on CompuServe's Powersoft Forum last week.

While many users cited productivity gains in creating applications with PowerBuilder, at least 50 users voiced complaints on CompuServe over the past month about the instability of the tool in a variety of situations.

In CompuServe discussions dealing with general protection faults, developers described system failures occurring, for instance, with Powersoft's debugger, screen and database painters and in conjunction with certain video monitors.

> **"I've been doing extensive, intensive PowerBuilder development for over a year.... PowerBuilder has a dual personality: Good PB and Evil PB."**
> —CompuServe user on PowerBuilder bugs

"I'd like them to fix the bugs in 3.0 before they come out with a new version," said Joe Pearson, an analyst at JDP Computer Services in Boise, Idaho, who provides consulting services for several banks and the state of Idaho.

"It's ridiculous. We've got a mission-critical application which **Powersoft,** *page 117*

Novell head offers truce to Microsoft

By Elisabeth Horwitt

Robert Frankenberg's first official act as Novell, Inc. chairman last week was a momentous one. He established detente with the network operating system giant's longtime rival, Microsoft Corp.

At a meeting with Gartner Group, Inc. analysts last week, Frankenberg said he had met with Microsoft Chairman Bill Gates the previous week. "The Microsoft bashing and bad relationships will go away," reported David Cappuccio, an analyst at the Stamford, Conn., research firm.

Higher profile
Ending the silence he has maintained since his appointment as Ray Noorda's successor last March, Frankenberg also briefed some analysts on several announcements slated for the Networld Interop show early next month.

Among the key product introductions will be Mosaic front ends that will enable NetWare clients and servers to interact on the Internet World-Wide Web. Also in the **Novell,** *page 10*

Big Oil overhauls IS role

By Julia King
and Jean S. Bozman

Fueled in part by more efficient information systems, cutbacks at major oil companies are reverberating through the ranks of IS departments. The result is a recasting as well as a downsizing of the IS role.

Several of the top petroleum firms trimmed 10,000 jobs in recent weeks as part of an inexorable drive to decimate costs and boost profits. And as more companies embrace packaged applications and rely on outside providers for industry data, IS is increasingly finding itself a target of the cost-cutters.

Moreover, implementations of open systems — with their use of packaged software,

William Bartz: *Large IS shops must cope with new demands while staffs dwindle*

Unix servers, relational databases and PC clients — are proving far less costly than labor-intensive mainframe data centers, IS executives said.

The magnitude of change in the oil industry, where the revenue of large firms ranges between $20 billion and $100 billion, is stunning. The shift is also emblematic of trends sweeping the industry, said William E. Bartz, president and chief executive officer of the Petrotechnical Open Software Corp. and a former Chevron Corp. executive.

"The biggest change you're seeing in the oil business today is that these huge IS staffs that used to build [application] systems are being eliminated," Bartz said.

Oil, *page 20*

What's Inside

Wholesalers buck the trend
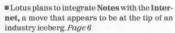
SEE MANAGEMENT, PAGE 77.

Wal-Mart and Kmart keep costs low by cutting out the middleman whenever possible. But executives at a few wholesale distributors, like Ron Chaimowitz of GT Interactive Software, are using information systems to stay indispensable.

CLAUDIO EDINGER

NEWS

■ As **Powersoft** officials press forward with a new version of their development tool, scheduled for unveiling this week, some developers say they are still having problems with the current release. *Page 1*

■ Desktop vendors keep announcing **price cuts,** but users want to know just how deep the cuts will go. *Page 4*

■ Users grapple with the issue of how best to connect their **Novell** NetWare and Unix servers. *Page 6*

■ Lotus plans to integrate **Notes** with the **Internet,** a move that appears to be at the tip of an industry iceberg. *Page 6*

■ Old-time IBM competitors Amdahl, Hitachi and Unisys head a group opposing **IBM's** efforts to end a 38-year-old antitrust accord. *Page 7*

■ IBM plans a faster version of **CICS/6000** that analysts say should finally make it competitive with rival Unix transaction processing products. *Page 12*

■ Users and vendors plan to share information about **security threats** and solutions. *Page 14*

■ **Cisco** tightens ties with Chipcom and Cabletron through technology-sharing agreements. *Page 15*

■ Novell's beta version of **NetWare 4.1** is on time, and users say it looks good. *Page 16*

■ The first voice-centric **PDA** hits the market with BellSouth's Simon. *Page 24*

COMPUTER INDUSTRY

■ **Thinking Machines** has filed for Chapter 11, but analysts and users remain hot on parallel processing's promise. *Page 30*

DESKTOP COMPUTING

■ The **Borland Database Engine** provides a common engine for developers across Borland's product line. *Page 39*

WORKGROUP COMPUTING

■ While network managers often overlook them, **network modeling tools** can make network design more of a science than a black art. *Page 45*

ENTERPRISE NETWORKING

■ **Banyan's** upcoming product enhancements may be too late to retain some corporate customers. *Page 57*

LARGE SYSTEMS

■ **Closer Look: Client/server** computing makes application integration possible, but there's nothing easy about it. *Page 63*

APPLICATION DEVELOPMENT

■ Corporate IS developers are about to step into a storm of **object-oriented** activity. *Page 71*

IN DEPTH

■ So you have mastered C++ and Smalltalk. But to make your **object-oriented development** effort work, you need a far-ranging vision, sharp focus and this 12-step survival guide. *Page 89*

CAREERS

■ No two approaches are the same when supporting a **mixed environment.** However, one thing is clear: Support staffs are creatively doing more with less. *Page 96*

MARKETPLACE

■ Individual **chargeback** products are not comprehensive enough for distributed environments. *Page 106*

COMMENTARY

■ **Paul Gillin** warns that Apple must focus on core markets and technologies. *Page 34*

■ **Philippe Amouyal** says Microsoft succeeds by doing things right, not through predatory practices. *Page 35*

■ **Paul Strassmann** says that information architectures are useless if they don't take into account the corporate power structure. *Page 35*

Executive Briefing

It may not have the impact of the Nixon/Soviet detente efforts, but Novell and Microsoft took a step toward world peace in the computer industry when new Novell Chairman Robert Frankenberg and Microsoft Chairman Bill Gates sat down for what has been described as an amiable talk. *Page 1*

Fueled in part by more efficient information systems, cutbacks at the major oil companies have been ongoing for the past several years. But now IS is becoming a target, as more petroleum companies embrace packaged software applications and rely on outside providers for industry data. *Page 1*

There are staff cuts elsewhere as well. Sources say Scott Paper is paving the way to outsource its IS organization by cutting jobs and placing the remaining staffers in a holding pattern. Meanwhile, Bell Atlantic is bracing for beefed-up competition by cutting costs and personnel and developing open information systems. *Page 8*

What does the future hold for IS? Prepare for a client/server world where hardware, applications and skills are disposable, users do much of their own programming and chargebacks are a thing of the past, or you may end up a disposable person. That's the advice of PNC Mortgage's outspoken IS chief, Leilani Allen. *Page 84*

Plans to open Denver International Airport — which will replace Stapleton Airport — are still on hold, as the city struggles to get a computerized baggage system on-line. The airport, which was set to open on March 15, may not open now until Dec. 31. *Page 28*

Managers of multinational networks want products — and product support services — that help extend their networks to countries whose information highways are less sophisticated than those in the U.S. But sometimes what they get is a product tailored for the U.S. networking environment that is supported poorly — if at all — in other regions of the world. *Page 57*
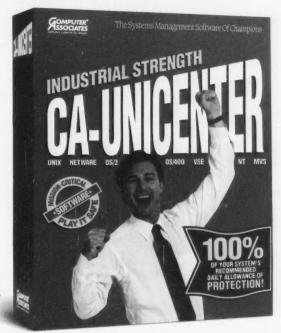
Future network and systems management applications will pore over data sent across networks and peek into desktop computers, sometimes with the help of products that take control of processes on LAN-attached PCs without users' knowledge. As a result, network and IS managers are beginning to rethink their privacy and security policies. *Page 14*

The 5th Wave *by* Rich Tennant

@RICHTENNANT

"YEAH, I'VE FINISHED REVIEWING THE MONITOR, KEYBOARD, CPU AND PRINTER, AND I'M JUST FINISHING UP MY REVIEW OF THE MOUSE RIGHT NOW."

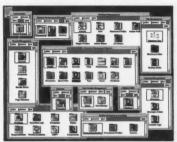# For A Fortified Client/Server Environment, Add This To Your Diet.

Virus infection spurs Internet debate

By Gary H. Anthes

■ **Quiz time. Internet service providers that allow computer viruses to be distributed over their networks are: a) criminals; b) negligent but not criminals; c) innocent parties with no responsibility for what moves over their networks; d) defenders of free speech.**

No matter how you might answer the above, you would have found support last week in a growing debate over allegations that an Internet access provider knowingly allows computer viruses to be distributed over its network.

The vendor, Netcom On-Line Communications, Inc. in San Jose, Calif., said it was investigating a user alleged to be distributing viruses but so far had turned up no evidence of illegal or improper behavior.

"If we determine he is distributing a virus that would be disruptive, he's out of here in a heartbeat," said Netcom President John Whalen.

Breaching the 'netiquette'

Whalen said users engaging in illegal activity — or even significant breaches of "netiquette" — are given the boot. In one highly publicized case, Netcom recently yanked network access from an Arizona law firm that violated Internet rules by broadcasting advertisements for its legal services.

According to virus authority Fridrik Skulason, president of Frisk Software International in Reykjavik, Iceland, the offending account contains *40Hex, Crypt* and *Nuke InfoJournal*, underground magazines that contain annotated virus source code and instructions for writing viruses.

One of the viruses available on a Netcom account, according to Skulason, is "KOH," which encrypts files on the hard disk and then replicates them to diskettes. "The author claims it is completely harmless, but that is absolute bull—," he said. "It can cause serious compatibility problems under certain circumstances."

Skulason posted a complaint about Netcom several weeks ago to the Internet news group comp.security.misc. He later received a reply saying that while Netcom does not endorse the distribution of viruses, viruses are not illegal.

Dennis David, vice president of operations at Netcom, said he knew of a Netcom customer who had the virus material available for file transfer. "Why he has it out there, I don't know," David said. "But companies that write antivirus code need to have virus samples available. How do I know whether this user is supplying virus code to legitimate accounts?"

Computer security experts said it is generally not possible to determine who is ultimately harmed by viruses downloaded from Internet bulletin boards because most viruses come from multiple sources, and there is generally no audit trail showing who has downloaded an item.

It is difficult for access providers to keep harmful things such as viruses off their networks, said Anthony M. Rutkowski, executive director at the Internet Society in Reston, Va. "But if a specific instance is brought to their attention, the operator has a responsibility to do something."

"I don't think they have a responsibility for searching through every file, but as soon as Netcom knows [viruses] exist, it would be their responsibility to get rid of it," said Peter S. Tippett, director of security and enterprise products at Symantec/Peter Norton Products Group.

Damned either way

But the issue is not that simple, said Mark Rasch, a computer crime specialist at the Washington law firm of Arent Fox Kintner Plotkin & Kahn. "Service providers are damned if they do and damned if they don't," he said.

According to Rasch, if providers attempt to regulate the information on their networks, they stand accused of violating First Amendment speech rights. If they keep hands off but know that harm may result from something on their networks, they could be sued as an accomplice by the party harmed. "Of the two, I'd rather get sued on First Amendment grounds," he said.

Whalen said the right to free speech cuts both ways. "We have a First Amendment right not to carry customers who violate rules, just as a newsstand owner could refuse to carry pornography."

Desktop pricing plunge accelerates

By Jaikumar Vijayan

As desktop prices continue their seemingly crazy free fall, many customers are asking, "Just how much further will they drop this year?"

"Definitely more," if current trends are any indication, according to Tom Kucharvy, president of Summit Strategies in Boston. In fact, figures from market research firm WorkGroup Technologies, Inc. in Hampton, N.H., show that on average, prices for typical 60-MHz Intel Corp. Pentium boxes, for instance, could drop by an estimated 18% between this year's second and third quarters. That being the case, some users said they will put off purchases.

Leaders set trends

As vendors prepare for the busy late third- and fourth-quarter season, users can expect to see further price cuts from second- and third-tier vendors. These expected cuts are provoked primarily by market leader Compaq Computer Corp.'s announcement last week that it is dropping prices again, analysts said.

Compaq rolled back prices on almost its entire product line by up to 22%. The Houston-based box maker's second major price reduction in less than three months could once again significantly lower the pricing bar, according to analysts.

After the most recent reductions, a high-end Compaq DeskPro XL that used to sell for $3,299 will now sell for $2,999; a value-priced ProLinea previously selling for about $2,299 now sells for $1,949.

In response, analysts said, users can expect cuts from competitors that match or exceed those announced by Compaq.

The latest Compaq price cuts follow similar but smaller cuts from first-tier rivals IBM PC Co. and Dell Computer Corp. For instance, earlier this month, Dell

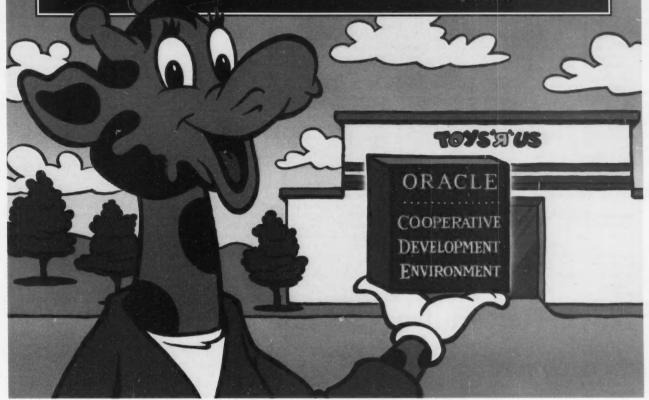| Desktop drops		
Average pricing for a system with a 66-MHz Pentium, 8M bytes of RAM and a 340M-byte hard drive		
PRICE FOR 1994	**PERCENT CHANGE**	
Q1 – $4,199	NA	
Q2 – $3,197	31%	
Q3 – $2,698*	18%	
*Projected	NA - Not available	

Source: WorkGroup Technologies, Inc., Hampton N.H.

dropped prices on some server products by up to 23% and recently introduced very aggressively priced Pentium products. This month, Dell started shipping a new 90-MHz Pentium system for $2,799.

Dean McCarron, an analyst at Mercury Research in Scottsdale, Ariz., predicted that as more vendors respond to pricing actions by the top vendors, some systems, such as those based on high-end Pentium 60- and 66-MHz processors, could start becoming widely available for less than $2,000.

"What is probably going to happen is that the current $1,500 to $2,500 price points are going to get reestablished with a new feature list," McCarron said.

The recent price cuts are said to be fueled by falling processor prices — particularly Intel's Pentium push — and an increasing willingness by top-tier vendors to buy market share. In turn, this activity is expected to result in lower prices as the Christmas season approaches, according to analysts.

Waiting for a big drop

Users are watching closely, and there are indications that at least a few may be postponing purchase decisions and waiting for prices to fall even further.

"Our current strategy is to delay almost all our purchases 'til the best possible time," said John Williams, manager of MIS at Priority Pharmacy in San Diego. "Vendors have been making some huge price reductions so we have decided to wait and see before buying."

Others may be thinking of doing the same. "With these periodic price cuts, it's better to just hold on for some time to get a better deal," said Frank Chastain, a manager of information systems at Sprint Corp. in Overland Park, Kan.

Also key is the possibility that as more vendors start to offer price cuts, increased competition at the retail and reseller end of the channel could mean even lower street prices.

However, not many think a real price war will erupt.

"I think if inventory levels remain high, then pricing could drop," said Richard Zwetchkenbaum, an analyst at International Data Corp. in Framingham, Mass. He discounted the possibility of a price war though and said prices are dropping because of rapid product transitions.

"I don't see it in Compaq's or anybody's interest to generate a price war. They want to keep products moving and manage life cycle transition. Today's product that isn't moving is tomorrow's landfill," Zwetchkenbaum said.

Corrections

Make no mistake about it — Digital Equipment Corp.'s Alpha AXP system is, indeed, a 64-bit system. Due to an error, it was described twice as a 32-bit system [CW, July 18 and Aug. 15]. In fact, Digital made the transition from 32 to 64 bits ahead of Hewlett-Packard Co., IBM and Sun Microsystems, Inc., its chief competitors and runs a 64-bit Unix variant as well.

Due to a reporting error, "Software agents target 'cyberglut'" [CW, Aug. 15] included a chart stating that a Deep Woods Technology client firm had 400 employees. The company has 24,000 employees but only 400 were included in the survey detailed in the chart.

Users still struggle to link NetWare, Unix

By Jean S. Bozman

As Unix servers become more widely used as database servers and hosts of corporate applications, they are increasingly colliding with the Novell, Inc. NetWare LANs that dominate PC users' workgroups.

Information systems managers said last week they are wrestling with finding the best way to hook NetWare and Unix systems together. But the problem remains that Unix and NetWare have two different ways of handling files, directories and print services.

"It doesn't take a rocket scientist to see that there's a big hole in integrating Unix and NetWare," said David M. Smith, director of advanced operating environments research at International Data Corp. in Framingham, Mass. Yet so far, he said, Novell has failed to edge out Unix players in providing NetWare/Unix links, even though Novell bought Unix System Laboratories, Inc. and its Unix source code last year.

A *Computerworld* survey of 60 IS shops last week showed that 78% of them already interconnect their PC LANs and Unix networks.

There is no lack of products to tie NetWare and Unix together, users and industry analysts said. Novell, along with third-party software firms and Unix systems vendors, has a number of TCP/IP Network File System and IPX/SPX protocol packages that create connectivity.

In the works

While independent software firms and Unix system vendors offer their solutions to the problem, Novell is expected to throw its hat into the ring with an enhanced NetWare/Unix integration package when UnixWare 2.0 ships later this year.

Keith Brown, director of technical marketing at Novell's Unix Systems Group, said last week that Novell plans to enhance its Unix-Ware 2.0 Unix operating systems this fall to include greater connectivity between Net-Ware and a wide variety of Unix systems from other vendors.

Some users at Unix-centric sites, including New Orleans utility firm Entergy Corp. and the American Barrick Goldstrike, Inc. goldmine in Elko, Nev., are so frustrated with duplicated directories and features that they are removing NetWare LANs.

"Our whole point in doing this was that we would get to one common network," said Dan Sullivan, a hardware technician at the Barrick mine who manages PC/Unix integration. "The critical item there was maintaining three separate networks," including two Net-Ware networks that once had 120 of the site's 500 PCs.

Using both NetWare and Unix servers, however, is more widespread. "The problem is there's a sort of emotional reconciliation here," said Tony Carrato, a consultant at Mile-High Information Services in Denver. "How do I persuade myself it's OK to run NetWare and realize NetWare is wonderful for file and print services but [that it] doesn't make much of an [enterprise] application server?"
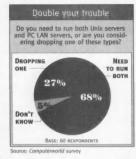
Some user sites are standardizing on NetWare LANs for workgroups but are adding connectivity to a new generation of Unix enterprise servers. "Our PCs are on Novell for the most part, but we are all migrating to Unix" servers, said Joey Cartwright, a technical adviser at Federal Express Corp. in Memphis.

Cartwright said about 300 corporate application developers on NetWare LANs need to access the Unix servers that run Fedex's corporate applications. His group is evaluating a number of TCP/IP packages for PCs, including LAN WorkPlace from Novell, to create the links.

McGill University in Montreal has more than 500 Unix workstations and servers on campus and about 4,000 PCs, many of them on NetWare LANs.

"It all comes down to what you want to do and where does your application reside," said Lisa Laing, a network systems analyst at McGill's computing center. "That determines which servers hold the applications."

Users consider dumping Banyan's Vines. See page 57.

Double your trouble

Do you need to run both Unix servers and PC LAN servers, or are you considering dropping one of these types?

DROPPING ONE 27%

NEED TO RUN BOTH 68%

DON'T KNOW 5%

BASE: 60 RESPONDENTS

Source: *Computerworld* survey

A *Computerworld* survey of 60 IS sites showed that 59% of the respondents were "not at all likely" to replace any PC LANs with Unix servers over the next 12 months.

Internet integration plans ramping up

By Lynda Radosevich

Firms looking at the vast, uncharted territory of the Internet for new ways to disseminate information should receive a helping hand from familiar vendors by early next year.

Lotus Development Corp. said it plans to integrate Notes with the Internet, a move that appears to be at the tip of a large industry iceberg. Oracle Corp., WordPerfect Corp. and SunSoft, Inc. also acknowledged they are working on software that will integrate their products with the World-Wide Web, a standard client/server hypertext system that runs over the Internet.

A Web server lets firms publish information with live links to data on other servers. It can be accessed using Internet browsers such as Mosaic. In short, it can function as public groupware. Yet creating a Web server is more complex than creating simple Internet messaging or news-feed connections.

The promised integration, however, will ease the creation of Web servers. It does this primarily by setting up two-way links between popular commercial applications such as Notes and HyperText Markup Language (HTML), the Web's document format. The links will enable users to quickly develop information applications using commercial software

and make the information available to Internet users who have Web browsers.

"There's a whole growth of activity on the Internet and on Notes. This ties the biggest groupware platforms [Notes and

HOW TO MAKE THE WORLD-WIDE WEB BETTER FOR CORPORATE GROUPWARE

○ **MORE EXTENSIVE** database capabilities such as forms authoring

○ **MORE SOPHISTICATED** tools for full text searching

○ **MORE EXTENSIVE** replication capability

○ **TIGHTER SECURITY** such as encryption capability

○ **LESS COMPLICATED** authoring tools for creating web servers

○ **SUPPORT** for an interactive model. Web is used mainly for browsing now

Source: Corporate Software, Inc., Arlington, Va.

the Web] into one," said Ameet Patel, manager of advanced technologies at BASF Corp., an international conglomerate with U.S. headquarters in Parsippany, N.J. This is what makes it so interesting to corporate users such as himself, he added.

Although user companies want to use the Web to reach the Internet's wildly expanding user base, authoring Web serv-

ers is not easy because the software is public domain software and lacks support (see chart). That is where the commercial software can step in, users said.

Lotus officials confirmed last week that the company plans to enable Web browsers to access information in a Notes database and to enable Notes clients to access Web servers.

An Internet-equipped version of Notes could be a lower-cost, lower-support version of the AT&T Network Notes service that AT&T Corp. and Lotus announced for early 1995. Lotus plans a low-cost Notes client aimed in part at preventing users from turning to commercial versions of Mosaic clients (see below).

To deliver Internet capabilities this year, Lotus will probably partner with

companies that already have developed HTML-to-Notes code, analysts said.

Corporate Software, Inc. is a likely candidate. At GroupWare '94 in San Jose, Calif., the company demonstrated Web-Link, a bidirectional gateway that lets developers create Notes databases and convert them to Web servers.

Other vendors also have big plans for Internet integration. Oracle said it will unveil a corporate enterprise version of its Oracle Media Server at its Sept. 25 user conference in San Francisco. The Media Server, based on Oracle 7, will include the bidirectional software needed to create Web servers using Oracle, said Ray Bell, a director of product integration.

WordPerfect expects to have HTML authoring software by next year, said a source close to the firm. And SunSoft will soon ship billing and security software that helps users commercialize the Web.

Notes on the cheap

Lotus plans to announce a cheaper version of Notes that will likely provide Notes electronic mail and access to Notes databases next month and deliver it shortly thereafter, according to sources close to the company. However, they said the product, Notes Express, will not offer the full slate of development capabilities.

Notes costs $495 per user and sells commercially for as low as $300. Notes Express will cost roughly $100, the sources said. Analysts and users said

lower-cost clients are key to broadening Notes acceptance at Notes sites and on the Internet.

Lotus already said it will develop a Notes "lite" client to use with AT&T Network Notes, but the sources said this is a separate development that Lotus will market. But it is unclear how Notes Express will differ from a client/server version of CC:Mail due in 1995 with Notes Version 4.0 that Lotus said will have Notes database access.

—Lynda Radosevich

Industry group assails IBM bid to end decree

Association goes to court to maintain status quo

By Mark Halper

Concerned that IBM's efforts to terminate a 38-year-old antitrust decree could damage competing hardware and software vendors, an association representing a broad swath of the computer and communications industry is opposing the recovering giant's latest attempts to set aside the ruling.

The Computer & Communications Industry Association (CCIA) plans to file a motion today in U.S. District Court for the Southern District of New York requesting permission to intervene in the case, according to a memorandum the group filed with the court late last month.

IBM asked the same court in June to terminate the 1956 Consent Decree, which among other restrictions prevents IBM from providing special hardware and software pricing to its own outsourcing subsidiary, Integrated Systems Solutions Corp. [CW, June 13].

For users, the case raises the question of whether a successful IBM effort would result in lower prices but fewer choices of product and services vendors.

Some hardware and software companies are concerned that without the decree in place, IBM would be able to dominate markets by leveraging its market power to gain account-controlling service contracts. IBM has argued that the consent decree is an anachronism that applied before the company fell from its position as a dominant industry power.

"IBM has already stated its intention to exercise its monopoly power should the consent decree be terminated," the CCIA said in its memorandum. "With the consent decree terminated, IBM would want to cross-subsidize its service subsidiary by not having it compete fairly on the basis of its costs."

Keeping a close eye

The CCIA noted in its filing that its members include venerable IBM competitors such as Hitachi Data Systems Corp., Amdahl Corp., Unisys Corp., Storage Technology Corp. and Tandem Computers, Inc. However, the CCIA filing does not necessarily mean that each of those companies oppose the IBM initiative to remove the consent decree.

Still, the named companies are watching the matter closely.

"We were one of those that requested CCIA take an active role in this action," said Ryal Poppa, chief executive officer at StorageTek. "The consent decree places certain restrictions on IBM that

StorageTek CEO Ryal Poppa: Decree promotes competition

we believe will be useful in assisting us and others in our industry in working with IBM."

Poppa said he fully supports the spirit, if not the letter, of the consent decree, which he described as promoting competition. IBM's storage division has been uncooperative in providing software interfaces to StorageTek, and abolishing the consent decree would encourage more of that type of behavior, Poppa claimed.

Don Fowler, senior vice president at Tandem, said the CCIA acted independently of Tandem but that the company is looking into the possible ramifications for its business if the consent decree is terminated. The company should complete an evaluation in two to three weeks, he said.

A Unisys spokesman declined to comment on the case, and the Hitachi executive monitoring the consent decree issue was on vacation and could not be reached.

More OS/2 apps on the way

IBM said last week it will sweeten the deal for OS/2 users by bundling more than 10 applications with the next version of the operating system, expected around October. Called BonusPak, the bundle will include a suite of native 32-bit applications. Included will be a word processor, spreadsheet, database, graphics application, communications program and a personal information manager.

HP posts strong Q3 revenue

Building on its growing strength in Unix servers and PCs, **Hewlett-Packard Co.** reported a strong third quarter for its computer products. Sales of HP 9000 Model 800s — HP's largest Unix servers — accelerated, creating 40% more revenue in this third fiscal quarter than for the same period in 1993, HP said. Steady growth in PCs and HP's printer business combined with Unix server sales to push quarterly revenue 22% higher than the same quarter last year. Quarterly revenue was $6.1 billion, including $4.6 billion related to computer sales, with profits of $347 million.

AT&T GIS to port Unix to NT

Microsoft Corp. last week enlisted **AT&T Global Information Solutions** in its battle to gain enterprise acceptance of Windows NT. The two companies announced that AT&T GIS will port key Unix features to the 32-bit operating system. Drawing on software it offers in the Unix world, AT&T GIS will port its Top End transaction processing, LifeKeeper FRS clustering and NetVault and CommVault network backup and restore programs to NT, the company said.

MCI announces SMDS pricing

MCI Communications Corp. became the first long-distance carrier to announce pricing for Switched Multimegabit Data Service (SMDS) last week. Pricing for MCI's HyperStream SMDS service is composed of two parts: a monthly port/subscription charge based on access speed; and transport charges. MCI's pricing does not include the fees charged by a user's local exchange carrier for an SMDS access point.

Cray gets $4.2 million in fed deal

Financially strapped **Cray Computer Corp.** signed a deal to get up to $4.2 million from the National Security Agency (NSA) for use in developing a promised system combining its Cray-3 supercomputer with massively parallel processing chips engineered by the NSA [CW, July 18]. The NSA has not committed to purchasing the Cray-3/MPP hybrid, which will make its appearance during the second quarter of next year.

Compaq to put safety warning on PCs

Beginning in the fourth quarter of this year, **Compaq Computer Corp.** will start placing labels on its keyboards urging customers to read a safety booklet included with every Compaq computer. The booklet, an updated version of an existing one, will offer suggestions on furniture, posture and lighting.

SHORT TAKES The **Student Loan Marketing Association** (known as Sallie Mae) said Washington veteran Edith W. Martin will become its chief technology officer.... Five Los Angeles gang members involved in a nationwide high-tech check forgery scheme were sentenced to 24 to 37 months in prison last week in Charlotte, N.C., after they pleaded guilty to bank fraud. Prosecutors said the gang, which used inexpensive computer equipment to generate counterfeit checks, was involved in passing more than $2 million in fake checks.

IS feels heat at paper giant . . .

By Julia King

Scott Paper Co. last week terminated about 20% of its information systems staff and placed another 70% of IS employees on hold until October, when the company is widely expected to outsource its entire IS operation.

"I'm going home now to bawl my eyes out," said a programmer analyst as she walked through the parking lot at the company's Phil-

a dramatic cutback in Scott's corporate headquarters staff, which the company said will decline from 1,100 workers to about 450. The company is also selling its 55-acre office campus as part of an overall restructuring that has been distinguished by its cost-cutting pyrotechnics (see timeline below).

In January, the company announced it would cut 8,300 jobs companywide in the next three years, a move expected to save

er this month, Dunlap widened the restructuring to include cutting 10,500 workers companywide by the end of this year.

Waiting game

Last week, Scott officials refused to comment specifically on the most recent round of IS cuts, but several staffers confirmed the layoffs and their "on hold" status.

"On Tuesday, we were each given a time for an appointment to learn our status," a staffer said. "The people who were let go also had appointments with an employment agency. They're finished today."

Another applications developer who was placed on hold said the cutbacks were not a total surprise to the IS staff. Many employees, including the developer, had been interviewing for new jobs over the past few months, he said.

IS staffers said the company also plans to cut 30 of about 40 on-site contractors. Additionally, they said plans call for outsourcing several other corporate functions, including payroll and compensation and benefits.

Scott Paper's downsizing rolls forward

● JANUARY 1994	● APRIL 1994	● JUNE 1994	● AUGUST 1994
Company announces it will cut 8,300 jobs in three years	Turnaround specialist Albert J. Dunlap is named CEO, the first company outsider named to the post	Dunlap accelerates job-cutting schedule by two years	Dunlap announces a 70% reduction in corporate staff, including IS, taking the company from 1,100 to 450 workers at company headquarters

*IS employee are terminated or placed on hold as a prelude to widely expected October outsourcing agreement with an as yet unspecified provider

adelphia headquarters last Wednesday. "Today, I still have a job, but for how long I don't know. We're not looking for any rational decisions here."

Last week's IS cuts were part of

$400 million. But in June, that plan was accelerated under orders from Scott's new chairman and chief executive officer, Albert J. Dunlap, who is called "Chainsaw" and "Rambo" by employees. Earli-

. . . and at telecom firm – again

By Julia King

Bell Atlantic Corp. Chief Information Officer Ralph Szygenda last week disclosed plans to radically overhaul the company's 3,000-person information systems organization.

Among other changes, it is closing five of seven data centers, cutting another 250 IS jobs in the next three years and developing several client/server systems designed to streamline service delivery.

Competitive pressures have already prompted an unprecedented increase in new systems development, which now accounts for about 60% of the total IS effort at the company. This compares with less than 30% a year ago.

"We have major systems development going on in customer service, billings and collections," Szygenda said in an interview last week. "What we're looking for is an overall reduction in our cost base."

By next year, Szygenda said, the company will have more than doubled and possibly tripled its installed base of distributed workstations, which already number

several thousand. Also, due largely to an increase in the use of computer-aided software engineering tools and object-oriented programming, development time has been compressed significantly.

"I have a major concept of chunking, [under which] you have to deliver some portion of value-added information every six months," Szygenda said. "You can't wait six years like before."

Three months ago, Bell Atlantic cut about 290 IS jobs, according to IS sources. The most recent reductions and the data center consolidations, which are expected to save hundreds of millions of dollars during the next decade, are the latest in a series of major organizational changes marking Szygenda's year-long tenure as CIO.

Shortly after joining the Philadelphia-based telecommunications company in June 1993, Szygenda decentralized its IS organization, bringing in veteran IS executives from MCI Communications Corp., American Airlines and Texas Instruments, Inc., among others, as CIOs at Bell Atlantic's six business units.

Bell Atlantic's Ralph Szygenda: *'We're looking at changing every process in IS'*

"We're looking at changing every process in the IS organization," Szygenda said. The overhaul, which involves between 25 and 30 business process engineers who report to Szygenda, is expected to take another three to six months.

Growing trend

Like every other telecommunications company, Bell Atlantic is pushing aggressively into open systems to prepare for the inevitable joint ventures that lie ahead. Communications companies will increasingly team up with one another as well as with content providers to offer network-based information and entertainment services.

The trend is "consolidation, expanding the footprint and having a greater degree of influence. You'll see constant and continual change, joint ventures and alliances," said Elaine Altman, a telecommunications analyst at Furman, Selz, Inc. in New York.

Doing more with less and the associated productivity gains are taking their toll on IS staffers.

"From an economic perspective, what Bell Atlantic is doing makes sense," one staffer said. "But I'm working five times as hard as I did six or seven years ago. I'd like to know, where do the cuts stop?"

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Microsoft, Novell

works is a massive reorganization of Novell's business units.

The new Novell will comprise four business units, according to an analyst briefed by Frankenberg. The units will comprise application products (including WordPerfect and, most likely, App-Ware); UnixWare; NetWare; and client software (such as the upcoming Mosaic client for the Internet).

Frankenberg also said he will de-emphasize those product areas that are outside Novell's core businesses, such as Novell DOS 7.0. He also confirmed plans to lay off 1,000 employees or more.

Frankenberg told Gartner Group that the main purpose of Novell's new rapport with Microsoft will be to ensure that the companies work together to develop products to tie Microsoft clients into Novell network operating system platforms, according to Cappuccio. Frankenberg further said that he, Gates and Paul Maritz, Microsoft senior vice president, will meet three times a year to ensure that the work is going well.

Users said they will benefit greatly if the vendors are really ending their longstanding, mudslinging rivalry, which has held back the delivery of satisfactory Microsoft clients for NetWare.

The change of heart is plain good news for users who want to mix Microsoft clients and Novell networks. "If Frankenberg and Gates work together on good requestors and, in particular, timely ones, everyone would benefit, and [Microsoft] would sell more NT in the NetWare environment," said Lisa Laing, a network systems analyst at McGill University in Montreal. "We are still waiting for a NetWare client for NT that works well."

Microsoft and Novell broke off their co-development on such a product last fall and came up with their own entirely different versions — neither of which is satisfactory, Laing said. For example, the Microsoft version, which the university now uses, lacks NetWare Directory Services (NDS) support. Microsoft has no current plans to provide NDS support on its NetWare requestor, a company spokesman said.

The detente follows the demise of the antitrust investigation of Microsoft, of which Novell was said to be a major backer.

While analysts refused to go into details of the nondisclosure briefings, they expressed approval of the directions Frankenberg outlined in his reorganization plans.

"In general, all the things he said were heartening," said Richard Buchanan, a senior analyst at Forrester Research, Inc. in Cambridge, Mass. "He has done extensive analyses of all of Novell's businesses to understand which can stand alone and compete."

Novell's Robert Frankenberg: 'Microsoft-bashing will go away'

Browsing the Web

On the product side, Novell will announce a Mosaic-based browser of World-Wide Web servers on the Internet. The browser will be embedded in Novell's LAN Workplace client software, according to a user who requested anonymity.

Mosaic is public domain software that provides a view into the Web, which uses Hypertext to embed live links in one document to route the user to another server.

Novell will also provide support for Mosaic on NetWare so that a LAN Workplace DOS client will be able to use the same front end to access either NetWare or an Internet Web server, the user said.

WordPerfect is also working on a Mosaic-based product, so the Web products could turn out to be an example of the synergy Novell Chairman Robert Frankenberg is working for.

—Elisabeth Horwitt

Faster CICS/6000 to rev up IBM Unix

By Craig Stedman

Later this year or early next, IBM plans to ship a faster version of its CICS/6000 transaction monitor — a move that should make the RS/6000-based software's performance competitive with rival Unix transaction processing products, analysts said.

IBM's acquisition of Transarc Corp. (see story below) last week was viewed in part by observers as a way for the company to gain more control over CICS/6000 development. CICS/6000, a Unix version of the widely used mainframe CICS, is built on top of Transarc's Encina on-line transaction processing technology.

Both CICS/6000 and Encina have been hindered by slow performance since they became available last year, said Rich Evans, an analyst at Meta Group, Inc. in Westport, Conn. "People don't complain about the functionality of CICS/6000," he said. "They would just like to see it run faster."

IBM confirmed that another version of CICS/6000 is due late this year or early next year. Performance "is an area that will improve over time as the product matures," said Dave Chapman, business development manager at IBM's software lab in Hursley Park, England. Between 10 and 20 customers are using CICS/6000 in production mode now, Chapman added.

Lamonts, Inc., a Bellevue, Wash., retailer, had to work around bottlenecks in Encina's Structured File Server to get performance similar to that of mainframe CICS on a 15-user sales audit application put on

CICS/6000 in April, said Jon Reitan, director of financial and credit systems.

Lamonts is unloading batch data into a Btrieve Technologies database to avoid the bottlenecks and then merging the information back into Encina, Reitan said. CICS/6000's throughput "wouldn't be comparable [to the mainframe version] if we weren't doing that," he said.

Performance "is a big issue right now" because Lamonts does about two-thirds of its business in November and December, and CICS/6000 has not yet faced that heavy a sales auditing work load, Reitan said.

A CICS/6000 1.1.1 release that shipped this summer can handle roughly 40 to 50 transactions per second — three times more than the first version that came out last year, Evans said. The promised Ver-

At a glance

TRANSARC CORP., PITTSBURGH

EMPLOYEES	ANNUAL SALES
200	$10M to $20M*

PRODUCTS
Encina transaction processing environment; DCE implementation; AFS network file system

NUMBER OF CUSTOMERS
Encina and DCE – 150
DCE only – 150
AFS – 500

ENCINA LICENSEES
IBM, Hewlett-Packard, Digital, Stratus, Fujitsu, Hitachi, NEC, Siemens AG

*Estimate by industry analyst

sion 1.2 should get CICS/6000 into the 60 to 100 transactions per second range already occupied by Novell, Inc.'s Tuxedo software and AT&T Global Information Solutions' Top End product, he added.

IBM "still may not be the winner, but it gets them close," Evans said. "They won't have to be ashamed anymore."

Roy Schulte, vice president of software management strategies at Gartner Group, Inc. in Stamford, Conn., agreed but said the time IBM is taking to resolve the performance problems is hurting the company's ability to prepare CICS/6000 for large, mission-critical applications.

"At a time when they could be building various extensions to the product, they're back to the drawing board reimplementing the basic modules," Schulte said.

IBM weds a needy Transarc

IBM last week purchased full ownership of Transarc, a small company that is one of the key suppliers of distributed computing and Unix transaction processing technology. Based in Pittsburgh, Transarc will continue to operate independently as a subsidiary of IBM, the companies said.

IBM provided Transarc's start-up funding and already owned more than

40% of the company, according to industry sources. As a result, users, analysts and other vendors that have licensed Transarc's Encina technology said they take at face value IBM's promise of a hands-off approach.

"I don't read bad things into this," said Alan Dickman, a technical staff member at US West Technologies, Inc. in Denver. "In the short term, it's not going to have any impact whatsoever,

at least on the basis of what I've heard." US West is doing exploratory work with the Encina transaction monitor, according to Dickman.

Transarc executives said the company has been profitable for the past three quarters, but analysts noted that its resources were stretched thin by a slower than expected ramp-up for Encina during the past year.

"The evidence is that this was a marriage of need," said Jim Johnson, chairman of The Standish Group International, Inc. in Dennis, Mass.
— *Craig Stedman*

OpenVision to regroup products

By Suruchi Mohan

Hoping to be perceived as an enterprise-wide systems management company, OpenVision last week announced that it will bundle some of its products and integration service offerings.

In addition to consolidating its 26 products into 13, OpenVision will offer product suites, some of which will be integrated with third-party applications.

But some analysts took a skeptical view of the announcement as an attempt by OpenVision to position itself as a hot growth company that will soon go public.

"OpenVision bought a bunch of point solutions and [tried to] build them into a bunch of systems management products," said Judith Hurwitz, president of Hurwitz Consulting Group, Inc. in Watertown, Mass. "Even in the best of circumstances that's hard. They haven't sold as many point products as they expected to, [and] the venture guys want them to go public."

While acknowledging that OpenVision management wants the company to go public, Rich Kreysar, senior vice presi-

dent of marketing at OpenVision, denied being pressured by investment firms. The whole exercise was motivated by user demand so "users can buy all solutions from a single vendor," he said.

Users had a mixed response to the "complete solution" approach, however. Jim Swanson, a vice president at CS First Boston, a New York bank, said he plans to stick to point products and not buy services.

On the other hand, Tsvi Gal, vice president of information technology at Wells Fargo Bank in San Francisco, applauded the move as a step in the right direction.

OpenVision's strategy is to divide its goods and services into four tiers:

- PointSolutions, offering the original point products.
- SuiteSolutions, offering three to four products and some consulting to solve specific systems management problems.
- SolutionsPlus, offering an enhancement of OpenVision products to work with certain applications.
- QuickConnect Services, offering OpenVision products and services along with an application from a partner.

Needful things

"Tivoli has a framework but few products; OpenVision has the products and is retrofitting to a framework," said Nili Young, an executive vice president at D. H. Brown Associates in Port Chester, N.Y.

Motorola urges cloning with new developer's kit

By Jaikumar Vijayan

The bid to spur a PowerPC desktop clone market received a boost last week when Motorola, Inc.'s Microprocessor Division announced a developer's program for OEMs and independent software and hardware vendors.

For users waiting for more desktop products based on the RISC microprocessor, Motorola's initiative could mean greater and quicker availability of PowerPC products. Apple Computer, Inc. is the only major U.S. vendor to have announced a desktop product based on the PowerPC. Its PowerPC partner, IBM, plans to announce a desktop computer based on the processor in October [CW, Aug. 1].

"It's a good move to seed the market with developer kits and get things moving with the PowerPC," said Robert Anderson, a senior analyst at A. O. Smith Automotive Products in Milwaukee. "So far, Apple has not been evangelizing the PowerPC as much as they should have."

Motorola's developer's program documents and promotes a reference design that complies with the PowerPC Refer-

ence Platform (Prep) specification using the PowerPC 603 or 604 processors. Under the program, Motorola will seed the market with a developer's evaluation kit, a manufacturing kit and a demonstration system running under Microsoft Corp.'s Windows NT for PowerPC. The demo system will be loaned to qualified customers and vendors, according to a Motorola spokesman.

Analysts said they expect a significant number of companies to snap up the developer's kits, though they estimated that the real clone market expansion would happen only when the software component surfaces.

"By making Prep-compliant motherboards easily available, it certainly takes away one of the barriers to entry" into the PowerPC clone market, said Martin Reynolds, an analyst at Computer Intelligence/InfoCorp in Santa Clara, Calif.

But, he said, "The key to the clone market is Apple's operating system. If they license the System 7 operating system, the market will really explode."

Microsoft's Office 4.2 for the Mac turns out to be a memory hog. See page 41.

*H*ewlett-Packard computer systems helped Spalding's worldwide revenue grow four times faster than the industry average.

"Our HP 3000s have taken the worry out of daily operations and future growth. They leave us free to concentrate on customer service."

— Bard White, Spalding's CIO and Worldwide Director of MIS

*I*nstead of investing in mainframes, Spalding looked for a better way to manage its growing business. A way that would make the 115-year-old sporting goods company more responsive to customer demands around the world and save money at the same time.

So HP developed a networked solution built around powerful HP 3000 Business Systems in a dozen data centers and distribution hubs worldwide. This gives Spalding instant global access to management information, helping them react quickly to changing consumer needs, and deliver products faster.

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HEWLETT PACKARD

Fed group provides data security info

Members receive solutions, tips

By Gary H. Anthes

The National Computer Security Association (NCSA) and Computer Sciences Corp. today will announce a coalition of users, vendors and government agencies that will share information about computer security threats and solutions.

The National Infosec Exchange (NIE) is intended to pull together information from widely diverse sources — including vendor products, user-derived solutions, government databases and underground electronic bulletin boards — and make it easily available to members via on-line databases, teleconferencing, hot lines, alerts and special interest forums.

"What this offers is an opportunity to deal with a consolidated view of the data security world," said George Caldwell, director of security services at Rochester Tel Corp. "This would be helpful so we don't have to hunt and fish and peck."

NIE members will have access to a new unit at NCSA called the Underground Research Laboratory. The two-person unit will search Internet bulletin boards and other hacker hangouts for information about computer threats and vulnerabilities. Intelligence information will be placed into a hypertext database and made available to subscribers daily, said Robert Bales, executive director of the NCSA in Carlisle, Pa.

NCSA's Robert Bales: *NIE could help corporations understand how security products work*

"These underground bulletin boards are a primary source of computer passwords and PBX codes that someone has hacked," said Mick Moritz, NIE project manager at NCSA. "But getting into the boards and staying on can be tricky."

Filling a need

"Many companies have one or two people dedicated to getting on bulletin boards to look for people targeting them," said Peter S. Tippett, director of security and enterprise products at Symantec/Peter Norton Products Group. "This would save them money and in many cases provide them with information they didn't even know was available."

Annual dues for the NIE program, which will be run by the NCSA under a member-elected management council, will be about $5,000 for small companies and $10,000 to $15,000 for large firms, according to Jim Harper, director of information systems security at Computer Sciences.

At Chevron Information Technology Co. in San Ramon, Calif., two full-time people devote their time to look for computer threats and vulnerabilities. Bob Cartwright, a security technology specialist, said Chevron decided not to sign up for the NIE service because the company believes its security bases are covered and did not want to hand off responsibility to another organization.

"But for a smaller company, it would be a good investment because there is no one place they can go to get everything they need," Cartwright said. "This would satisfy their needs."

NIE sponsors are hoping to make previously unavailable information from the National Security Agency (NSA) accessible to members and the public. "NSA has done probably billions of dollars of work in security product testing and evaluation," Bales said. "This information could give corporations a leg up on understanding how these products perform in different situations."

Users, vendors, civil libertarians clash over Internet rules of the road. See page 4.

Privacy issues surface

Desktop interface can track games, specific software usage

By Steve Moore

Within the next two years, managers of information systems and networks may find their jobs complicated by the challenge of protecting the privacy and security of users whose desktop PCs support the Desktop Management Interface (DMI).

The DMI, which was developed by the Desktop Management Task Force, is a set of standards through which server-based management applications will be able to remotely configure and manage desktop PCs across multiple platforms.

The potential for network and systems information intended for diagnostic or administrative purposes being used for other purposes has existed since the earliest days of network management, said Tom Nolle, president of CIMI Corp. in Voorhees, N.J. "The combination of remote monitoring and remote control has the potential to turn any network into a fishbowl," he warned.

I spy

Network management systems are already able to peek at the contents of every packet sent across a LAN or WAN by any user.

Once the DMI is supported in a broad range of PC hardware and software, network and systems management applications operating from multiple control points will know exactly which applications PC users have installed, when they access them and for how long.

"I can see value in logging what is being used on desktops so you can rightsize your software purchases, but you have to be careful to ensure the privacy of end users," said Al Brusewitz, director of information security at Rockwell International Corp. in Seal Beach, Calif.

"Users may not like the fact that LAN administrators will know what game software they put on their machines and how much they use it," said Dave Pass-more, a principal consultant at Decisis, Inc. in Herndon, Va. "Forget the network issues and just think about monitoring application usage. That will raise a much bigger stink if DMI reports generated automatically somehow get into management's hands."

A task force official said, however, that security is the responsibility of the network operating system providers and the network service providers. "The DMI is as secure as the network to which it is attached," said Chris Thomas, director of technology and alliances at Intel Corp. and chairman of the task force.

As an interface located inside a computer, the DMI — like any other aspect of the system — could be the target of foul play. "The DMI specification did reserve space for security, but at this point it is up to the developer as to how it is provided," Thomas said.

The desktop security and privacy situation may be complicated by an emerging class of LAN remote-control products capable of taking control of processes on networked PCs without users' knowledge.

"Remote control is an issue regardless of DMI," said Richard Roller, IS director at the Guggenheim Museum in New York. Roller emphasized that he is not worried about DMI's effect on end users in his organization because "we're not trying to be Big Brother, and in fact we go to great lengths not to be."

But Brusewitz said he expects DMI will "help us take better control and ensure we have proper licensing for software we have, as well as monitor games and other things that shouldn't be on the system and have them removed."

On the upside, DMI will ensure that corporate assets are used for business purposes only, Brusewitz said. "In some respect, you're invading their space, but you can't think of a PC as your own little private world when it's connected to the corporate network."

Network modeling tools can take mystery out of network design. See Page 45.

Users eye IBM on-line order system

By Craig Stedman

An IBM plan to create an on-line system for buying and distributing desktop software remains sketchy, but several information systems executives gave the concept favorable reviews last week. Electronic purchasing will hopefully result in faster delivery and lower prices, they said.

"I can see using something like that," said Ted Kassel, vice president of information services at Sysco Food Services/Albany, a division of Sysco Corp. based in Albany, N.Y. "A lot of times we do need software quickly. When we buy through dealers now, it takes a couple of days to get here."

The on-line system "could be useful, assuming that IBM gets enough [independent software vendors] on the bandwagon," said an IS executive at a large insurance company in the Midwest. "We find ourselves in a situation where speed is important, and we have to get things to users instantaneously."

IBM said a prototype of the on-line system with six of its own software products for sale is being tested by Sears, Roebuck and Co. Sears declined to comment on the project last week beyond saying it has been able "to very cost-effectively distribute and manage software."

Several more pilots are planned for later this year, and IBM expects to go live with the service in 1995, said Kathy Howell, director of worldwide software packaging development at IBM. However, many specific details still have not been finalized.

No other software vendors have signed up for the on-line system yet, and IBM is "still trying to figure out how this would be priced," Howell said. Packaging and shipping costs should be reduced, but how much of the savings customers will see is unclear at this point, she added.

IBM is also still mulling whether it will charge customers for connecting to its global network, the medium through which the software would be ordered and delivered. And the date for starting the system depends on how the pilot installations are received, Howell said.

"It sounds like they're still sort of feeling their way," said Paul Mason, an analyst at International Data Corp. in Framingham, Mass. Microsoft Corp. announced plans for a similar offering earlier this year along with many partners, but IBM may have a better chance to sign up other software vendors, he added.

Red hot

IBM has other alternative software distribution irons in the fire. It is working with unidentified retail outlets on kiosks that customers could use to buy software on customized CD-ROMs, a project that will likely be publicized late this year, IBM said.

Cisco partnerings aim to ease network management

By Stephen P. Klett Jr. and Steve Moore

Cisco Systems, Inc. last week raised the ante in the integrated hub/router poker game. The players around the table with Cisco include chief competitor Wellfleet Communications, Inc. and Big 3 hub vendors SynOptics Communications, Inc., Cabletron Systems, Inc. and Chipcom Corp.

With an eye on easing network management, Cisco strengthened its ties to both Chipcom and Cabletron in the form of tighter integration of its routing technology and software in each vendor's hub platforms.

In the process, the San Jose, Calif.-based internetworking giant further cooled its long-standing relationship with SynOptics. "We certainly are not doing any more development work with SynOptics, and our long-term relationship is in doubt," said Don Listwin, vice president of marketing at Cisco.

Cisco and Chipcom will extend their 4-year-old technology-sharing relationship by integrating Cisco's Internetwork Operating System (IOS) software into Chipcom's line of Oncore intelligent switching hubs. IOS runs on diverse network management platforms and makes the platforms appear to be a single entity. IOS automatically allocates resources and ensures that the network will support a wide variety of protocols, media, services and platforms, Cisco said.

The two companies will also integrate their management software, CiscoWorks and Ondemand, so that each application supports a window from which the other can be managed.

Savings in the long run

Analysts said the increasing focus on hub and router partnerships will eventually provide users with a single point of sale, which should engender — in addition to consolidated network management — increased volume discounts and cost savings by minimizing the number of boxes on their networks.

"Making their management software work together will make life simpler by making it easier to monitor our network," said Jerry Wyble, MIS network manager at Foxwoods Casino in Ledyard, Conn., which uses Chipcom hubs with integrated Cisco router modules.

The deal "should give us better interoperability and allow for better management ... by giving us one piece of software to manage both environments," agreed Andy Ofalt, network coordinator at Pennsylvania State University's Center for Design and Computing.

Cisco and Cabletron are working on a similar deal, and Cabletron confirmed that a modular version of Cisco's just-introduced midrange Cisco 4500 router will be available for Cabletron's MMAC-Plus hub by the first quarter of next year.

However, analysts said they did not expect either partnership to spawn integration benefits any time soon. The two applications will be "separate packages across a common enterprise network management system, and currently the only one they both run on is SunNet Manager," said John Morency, principal consultant at Strategic Networks Consulting, Inc. in Rockland, Mass. "It will take time for Chipcom to develop a device module specific to a Cisco router to run in the Ondemand NCS environment."

"These partnerships could minimize customers' choices and take away some of their flexibility. Users don't want to be forced to buy vendor A's hubs because they have routers from vendor B," said Kathryn Korostoff, president of Sage Network Research, Inc. in Natick, Mass.

Meanwhile, for some Cisco/Cabletron users, simply putting a router in a hub does not offer enough of a benefit over keeping them separate.

"We've looked at putting Cisco routers in our [Cabletron] hubs, but the only advantage is you have one fewer box to maintain. You still have separate management software that can't speak to each other," said Jon Castle, message engineer at Commonwealth Edison in Chicago.

Delivery of stable beta version keeps Novell on track with NetWare 4.1

By Elisabeth Horwitt

Last week's official release of a beta version of NetWare 4.1 moved Novell, Inc. past another milestone on the road to shipping the product by year's end. More importantly, users said the Provo, Utah, company seems to have finally gotten its next-generation network operating system right this time.

Alpha users and beta customers who received the code ahead of the pack said Version 4.1 is now stable and relatively bug-free. "It does what it is supposed to do," said Michael Haye, a programmer analyst at the University of Michigan who has been testing the latest alpha version.

"A couple of beta users called to tell me that they are totally enamored with it," said David Cappuccio, an analyst at Gartner Group, Inc. in Stamford, Conn.

This beta delivery is an important step for Novell for two reasons. NetWare 4.1, which should advance and correct problems found in earlier generations of 4.x, is now slated to ship by year's end, about nine months behind its original ship date. Also, because of those problems, many users have put off purchasing Novell's enterprise-based network services platform until NetWare 4.1 is delivered.

What the majority of users are waiting for, Cappuccio said, is Version 4.1's promised ability to provide a single global directory and user administration tool set across both NetWare 4.x and 3.x installations.

Users agreed. The "big thing we are looking for in 4.1 is prune and graft and the ability to move containers [of NDS user and resource objects] around," said Erik Dauplaise, a network administrator at Duracell International, Inc.'s technology center in Needham, Mass. In addition, Version 4.1 will enable the manufacturer to integrate two NetWare Directory Service (NDS) directory trees that were set up at two different sites.

Major impact

Kansas State University is interested in NetWare 4.1's NetSync feature, which will extend NDS support to legacy NetWare 3.x installations, said Jim Braun, a software development manager at the Manhattan, Kan., school. This will allow users to access NetWare 3.x and 4.x resources with a single log-in and enable LAN administrators to administer both sides of the house with a single set of Windows-based tools called NWAdmin.

While Braun has not yet implemented his NetWare 4.1

beta code, he said that based on reading the documentation, "I think it will be one of those releases that will have major impact on industry; they have obviously listened to their customers really well."

Braun added that he was pleased to read about a Version 4.1 NetWare Loadable Module (NLM) that "allows you to prioritize processes in the server CPU, so that if an NLM is hogging CPU utilization, you can slow it down and allocate [the extra resources] to other NLMs."

Most important to the University of Michigan is the promised NetWare Control Program support for the Macintosh, Haye said. This feature worked well on the latest alpha version he tested, enabling Macintoshes to access full NetWare 4.x services, including NDS, he added.

Kansas State's *Jim Braun: Novell has 'listened to their customers really well'*

Meanwhile, a few thousand Novell customers are buying the recently released NetWare 4.02, reassured by Novell's promise of an easy migration to Version 4.1, Cappuccio said [CW, July 25].

At least one company, U.S. Bancorp in Portland, Ore., said it sees no reason to make that migration. The bank is in the process of implementing NetWare 4.02 across some 450 branch LANs in its regional banking network. "NetWare 4.02 does everything we want," said Chris Weitz, network operations center manager at the bank.

While U.S. Bancorp can get along with the server-centric NetWare 3.11 for many of its sites, it wanted 4.x's global directory for administering all 450 LANs from a central operations center, Weitz said.

The bank waited for Version 4.02 because it fixed the major bugs that plagued earlier versions, Weitz said. In addition, Version 4.02 is "far more scalable" than its predecessors in terms of backing up multiple directory partitions on a single server, he added.

The one attraction Version 4.1 offers the bank is support of Novell's NetWare Link Services Protocol, which cuts down on interserver traffic across a wide-area network, Weitz said. However, U.S. Bancorp said it can get along without this feature.

Total package

Novell's NetWare 4.1 will ship with a bundled version of its Global Message Handling System (MHS), which will use NDS instead of its own directory. Because Global MHS came out during the NetWare 3.x era, before NDS came into existence, until now it has retained its own global directory, which users had to manage separately from NDS.

Novell is already moving to converge NetWare 4.x with its WordPerfect Corp. subsidiary's GroupWise messaging structure. GroupWise 4.1, which is shipping now, interoperates with Global MHS and will use

NDS as its directory by year's end, a Novell spokesman said. Novell intends to have one unified messaging structure by late 1995 or early 1996, he said.

Also last week, Novell announced NetWare MHS Mail Slots, available on the CompuServe's Netwire bulletin board. Slots can be used to automatically link message-enabled applications to MHS services and mailboxes. The applications can be written to Novell's Storage Management Facility 7 or to any of the leading messaging application programming interfaces. — *Elisabeth Horwitt*

Licensing

happening on an increasing basis for the following reasons:

• Users are finding it increasingly difficult to track the plethora of software license agreements they are now using.

• Proposed standard license technologies such as License Server API have lost support among software vendors [CW, Aug. 15].

• Resellers, which are facing diminishing margin pressures from product commoditization, have been looking to license management services to fill a revenue void (see story page 4).

• New component-based architectures such as Microsoft Corp.'s Object Linking and Embedding 2.0 are rapidly increasing license management complexities for vendors and users alike.

As a result of these issues, bewildered users have been casting about for a solution to their management nightmare.

While IS is just warming to the idea, it clearly has legs considering today's mar-

ket conditions. Corporate Software, Inc., a reseller in Canton, Mass., contends that it has contracted with 80% of its customers — mostly Fortune 500 accounts — to manage some of their software licensing. However, only 20% has jumped into it large scale, said Steve Bradford, director of operation re-engineering at Corporate Software.
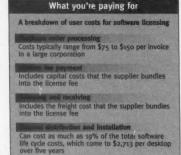
Security blanket

Not all resellers are as convinced that software license management programs are a panacea. "Right now, most sites have difficulties in figuring out how much of or what they have on-site," " said Cary Jenkins, product manager of software distribution at Entex Information Services in Rye Brook, N.Y. Entex also offers license management services.

Because an accurate count of software inventories eludes most users, it is these blanket agreements with a third-party vendor that best inoculate users from the complexities of license usage, said Priscilla Tate, executive director at Technol-

ogy Managers Forum in New York.

"It's not only the only option, but it's a smart move," Tate said. "Technical managers do change jobs, and who is left in the know after they leave?"

While users are in need of compliance methods, vendors are looking for user-friendly ways to sell more software. For example, Microsoft is now considering a number of approaches that could be introduced as soon as early next year, said

Jeff Drexler, senior product manager of organizational licensing at Microsoft.
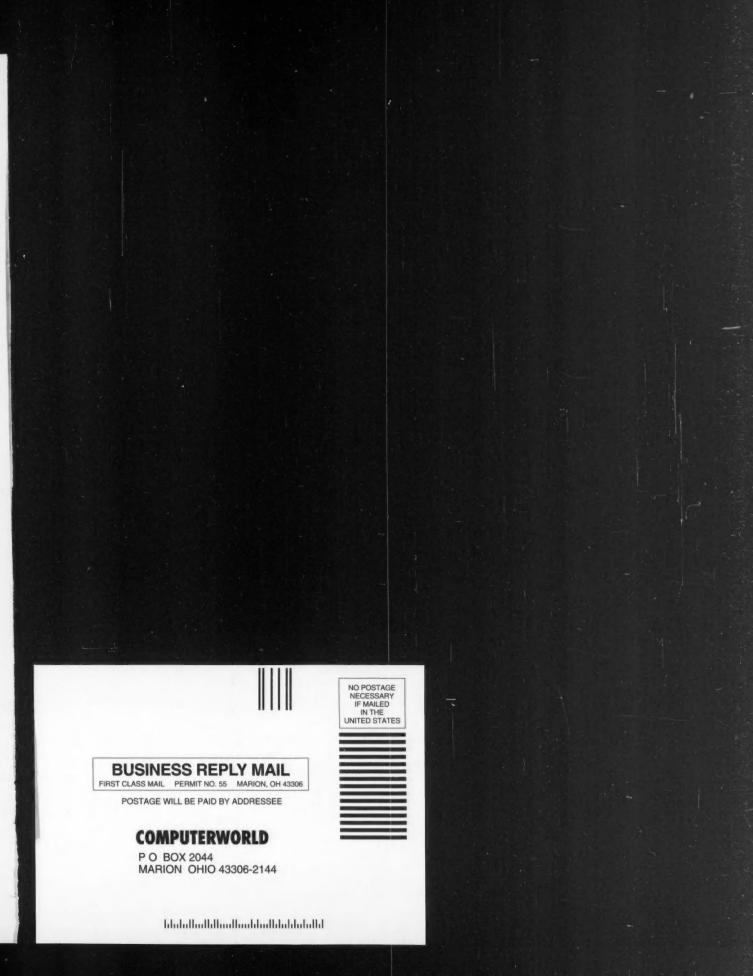
Microsoft is now considering letting users simply fax in licensing upgrades, which are often another sticking point with users, Drexler said.

Symantec Corp. in Cupertino, Calif., launched its own easy-upgrade program earlier this year. Instead of renegotiating, the site license, upgrades and maintenance agreements are handled by the reseller in any fashion that works.

Lotus Development Corp., which launched its Passport licensing program this spring, has no plans to upgrade it, a spokeswoman said. A WordPerfect Corp. spokeswoman said the company had no comment on its licensing policies.

In the meantime, resellers are recruiting small vendors for inclusion in their product mix.

"I just joined this company, and my No. 1 objective is to get a reseller to handle our licensing for us," said David Solomont, president of Clear Software, Inc. in Newton, Mass. "The issue isn't us just gaining clout with users. It's a matter of who is set up to do this. We aren't. The resellers are."

What you're paying for
A breakdown of user costs for software licensing
Purchase order processing Costs typically range from $75 to $150 per invoice in a large corporation
License fee payment Includes capital costs that the supplier bundles into the license fee
Shipping and receiving Includes the freight cost that the supplier bundles into the license fee
Software distribution and installation Can cost as much as 19% of the total software life cycle costs, which come to $2,713 per desktop over five years

Source: Gartner Group, Inc., Stamford, Conn.

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NEC

Oil firms

Some recent examples of the changes under way include the following:

● Unocal in Los Angeles and Amoco Corp. in Chicago announced massive corporate reorganizations that in the end will mean fewer IS jobs, according to company executives.

● In late June, Texaco, Inc., Atlantic Richfield Co. and Mobil Corp. joined Amoco in announcing staff cuts that will add up to a net loss of 10,000 oil industry jobs.

● Unocal and Texaco are also cutting costs by selling off a good chunk of their domestic oil production operations.

In addition, Unocal and Amoco are restructuring highly decentralized IS groups to form "shared-service organizations" designed to provide lower costs and one-stop IS support and services to all parts of the corporation. That contrasts with the former IS role of developing and maintaining complex mainframe applications.

Yet at Amoco, the initial enthusiasm to move to distributed computing caused some organizational chaos.

"Over the last three years, there was a big push in Amoco to distributed computing," said Mike Wilson, manager of planning and new technology introductions. "A lot of independent decisions were made [because] each department had its own support staff."

Drastic IS cuts

Now, Wilson said, Amoco is looking to slash IS support costs and achieve greater economies by following corporate technology standards that a new centralized technology unit will administer. A reorganization of IS is ongoing and is expected to be complete in the next two to three months, he said.

Unocal, a $10 billion petroleum and geothermal energy company, is also centralizing IS, which will serve three newly created finance, growth and operations divisions. To slash overhead costs, Unocal is looking to outsource more routine IS operations such as network operations and management.

The IS personnel who are left behind may find themselves advising business units on technology.

"We're becoming more of a consulting group than a do-it group," said Paul Jones, general manager of Unocal information services. "Now our job is to consult, find a best-of-breed solution and go get it."

"Any way you look at it, everything we're doing now is all related to cost-cutting," said Walt Temple, manager of financial information services at Unocal's Sugarland, Texas, office. "What it comes down to for IS is working smarter and working in more of a partnership with our clients."

For example, IS is creating more relational views of data so business users can easily access the information they need in a familiar form. Also, IS is providing users with more on-line support, Temple said.

Still, IS is not immune to the wrenching reorganizations that are being applied as oil companies refocus on core oil exploration and oil refining businesses.

Part of the pie

"The cutbacks affect the whole services side of the business, and IS is just a part of that," said Yvonne Donohoe, chairman of Petrotechnical Open Software Corp. and a global information technology consultant at BP Exploration, Inc. in Houston. "Generally, they're not targeted at IS only. The company is getting back to the center of its core activities."

Efficiency and cost-cutting lessons learned during open systems deployment on the exploration and production side of the oil business are now being applied more broadly, according to Donohoe. But the task of migrating back-office business applications from mainframes to open systems is expected to proceed more slowly than it did in the exploration side of the oil business, users said.

"You're going to find it's

very hard to do a one-to-one mapping of work loads," said Bob Washa, technology manager of Chevron's Advanced Financial Information System in San Ramon, Calif.

Chevron is cautiously ramping up the work load of three Hewlett-Packard Co.

Mileage may vary

The oil industry took these steps toward open systems:

- Oil companies agree to go to standard interfaces for intracompany data exchange
- Mainframes and supercomputers are outsourced or replaced with open systems
- Unix used in technical computing for oil exploration — 1990

Late '80s

- Costs saved on explorational technical side of company — Early '90s

- Companies try to apply lessons learned to reduce IS costs in business systems — Today

T500 Unix financial servers from 250 users to 550 users in January, using financial packages from SAP America, Inc. "There's no strategy here that we're going to be out of mainframes in three years," Washa said.

Likewise, a number of major oil firms are piloting client/server financial systems based on packaged Unix applications and relational databases, said Ed Wahtera, a partner at Andersen Consulting's U.S. Energy practice in Houston. But many oil refining, marketing and accounting departments - may be more resistant to using client/ server and open systems than the exploration groups were, he said.

"One of the things that held the oil companies [back] from going to client/ server transaction systems was their concern about security and the investment they made in the [mainframe] environment," Wahtera said. "They're slowly coming around to the fact that they probably need to change."

Steamlining ahead?

Driving the IS department reductions are declining oil prices, increasingly restrictive environmental regulations and cutthroat competition. Yet the price of oil rose from $13 a barrel this spring to about $20 in recent weeks. This could boost profits for a streamlined oil-and-gas company, oil industry IS executives said.

IS: Exploration experts

Texaco is actively restructuring its $34 billion business, announcing this summer that it is reducing domestic oil exploration in favor of international exploration and production.

But while Texaco's IS group built open systems solutions that helped cut exploration costs, it is now contemplating how to apply those lessons to its commercial operations such as finance and billing. IS is less than .05% of revenue, Texaco IS executives said.

"We've taken some steps last year about consolidating our operations," said Don Bennett, general manager of

the information technology department at Texaco in Houston.

Re-engineering moves are well under way — both for the business and the way information technology supports it.

"As the operating groups get to their new size, we will go through a process with them to validate or modify the business process," Bennett said. As re-engineering changes the flow of business and data, further cuts will be studied. But he said it is too early to say what those cuts will be.

—Jean S. Bozman

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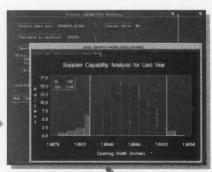
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BellSouth PDA needs price cut, applications

By Michael Fitzgerald

While Apple Computer, Inc.'s Newton became the personal digital assistant (PDA) everyone loved to slam, Simon may just be the PDA everyone wishes were cheaper.

Simon is BellSouth Cellular Corp.'s $899 cellular phone, fax, pager and electronic-mailbox rolled into one. The device weighs 18 ounces and has a number of PDA-like features, including a PCMCIA Type II slot, a calendar and an address book — but it lacks third-party applications. It is also available only in Atlanta-based BellSouth Cellular's markets.

Analysts said Simon should cost $200 less and needs an open application development environment instead of its current closed one.

"I love the idea," said Amy Wohl, editor of "Trendsletter," a newsletter in Bala Cynwyd, Pa. But she said usage costs for Simon were a question mark, and its price was probably too high.

At least one user liked the product.

"It sounds exactly like the types of products we were hoping would come to market, and clearly we'll evaluate it for probable pilot," said Edward N. Altman, vice president of MIS at Metro-Goldwyn-Mayer, Inc. in Santa Monica, Calif.

BellSouth's Simon *uses a pen interface for dialing and data input*

Industry observers have noted that phone companies, by coming at the PDA market with a focus on voice, might have a better approach than the data-oriented computer makers [CW, Feb. 14]. Simon establishes BellSouth as the first phone company to sell a PDA-type device.

Simon uses a pen interface but does not recognize handwriting. Rather, Simon has PredictaKey that constantly updates a six-letter screen as the user punches in letters with the pen. It also uses Lotus Development Corp.'s CC:Mail for electronic-mail. Other E-mail systems can be used with PCMCIA cards.

Responding to the customer

Dan Norman, BellSouth Cellular's director of research, said Simon was developed in response to customer focus groups that said they were interested in a phone with additional built-in features.

"We think there are a lot of people who want information on the move," Norman said, adding that Simon targets both corporate and individual users. BellSouth expects to sell between 50,000 and 100,000 units in the product's first year.

Timothy Schmidt, a mobile computing analyst at Probe Research, Inc. in Orlando, Fla., challenged the unit's potential.

"I don't think they went the full distance" on Simon, he said, suggesting that the product should have been designed so the user could look at the screen while using it as a phone. Schmidt also criticized BellSouth's lack of applications, saying Simon suffers from the same problem that plagues Newton.

Norman defended Simon's lack of applications. "It has all the software a road warrior needs," he said.

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One, two, three bytes you're out!

Simulated baseball games via pagerlike devices help newspapers, fans endure strike's duration

By Mark Halper

The Colorado Rockies' chance of capturing the National League West pennant crumbled a bit last week, when star center fielder Ellis Burks reinjured his wrist.

At least, that's what the computer simulation said.

Despite a baseball players' strike, disconsolate and angry fans around the country are receiving news like this, including simulated accounts of games, team standings and player performance from a Skokie, Ill.-based company called Stats, Inc.

"This was an interesting year for baseball, with Matt Williams chasing Roger Maris [single-season home run record], Tony Gwynn chasing .400, and Frank Thomas chasing the triple crown," said Barry Forbis, sports editor at the *Rocky Mountain News*, a Denver-based newspaper that is printing results provided by Stats. "We thought it would be interesting to see if it would all happen."

Addicted to statistics

Another way some baseball addicts are staving off withdrawal is by viewing this information on a real-time, pitch-by-pitch 1½-sq.-in. LCD display mounted on a Motorola, Inc. pagerlike device called SportsTrax.

After reformatting the information provided by Stats, Motorola broadcasts simulated Toronto Blue Jays and Chicago White Sox games via satellite to the 900-MHz SportsTrax pocket-size receivers, said Mike Marrs, a manager at Motorola's derivative technologies division in Boyton Beach, Fla.

"We were looking for something to turn the lemon into lemonade," Marrs said of the strike, which idled about 100 games in its first week.

Newspapers need it

As of late last week, Stats was sending on-line and faxed results to close to a dozen North American newspapers. The service provides a near ready-made way

to fill the dreaded "holes" on pages that editors had counted on filling with actual game reports.

"We're a tabloid newspaper, and sports is one of our big things," said Ciaran Ganley, a news reporter at the *Toronto Sun*, which last week prominently displayed tongue-in-cheek stories of World Series champion Blue Jays' games on page three. The paper was also sponsoring a contest giving away SportTrax gadgets to fans it selected as managers of simulated teams.

"A lot of newspapers will go back and write about historical things that happened to the team, but we only have one year of history," Forbis said.

Before the strike, Motorola had been selling the $149 sports pagers — including three years of home-team broadcasts — in Toronto and more recently in Chicago.

Jersey City, N.J.-based SportsTicker, a Stats competitor and Dow Jones & Co. subsidiary, had been culling real-time game information from reporters, or "human transponders" attending games, Marrs said. These reporters would enter game developments on laptop computers and transmit them to central SportsTicker computers for retransmission to Motorola.

With the advent of the strike, Stats stepped in as a source of simulated information by using a lineup of five clustered Digital Equipment Corp. VAXs and MicroVAXes and about 40 PCs running a variety of game simulation software.

Injured players

Computer probabilities include not only the obvious action such as hitting but also less ordinary events such as injuries, as in Burks' case.

The Rockies' outfielder, who had only recently returned to the pre-strike lineup after missing most of the season, had hit three home runs in the Rockies' first two simulated games before injuring his wrist.

"He can pinch hit; he can play defense for an inning or two, but he can't play a whole game," Forbis said.

Once the strike ends, Stats will resume selling real baseball statistics. It also sells data from other sports, said Arthur Ashley, Stats' vice president of systems.

At that time, Motorola will probably use both Stats and SportsTicker as sources for real game information for its sports pager, Marrs said.

Red hot sales

The company has sold "well into the thousands" of pagers in its two pilot markets and is ready to roll out the product in other cities, according to Marrs.

That was not always the case. Marrs noted that Motorola had initially worried about objections from traditional radio broadcasters, but those objections never materialized.

And early internal concerns that Motorola may have developed a flash-in-the-pan product have

The Motorola SportsTrax audibly alerts fans to real-time game developments with things such as a siren for a home run, a chirp for an inning change and a rally trumpet for a rally

subsided, at least for now. Marrs said Motorola has sold "well into the thousands" of units.

"We were concerned that this could be a hula hoop. . . . But the clubs are embracing it, and the league is embracing it," Marrs said.

Baggage system woes costing Denver airport millions

By Jean S. Bozman

■ The meter is still running at the Denver International Airport where a malfunctioning computerized baggage system is expected to delay the facility's opening until the end of the year.

As millions in delay costs continue to mount, the city has decided to spend another $50 million on a temporary manual system. Moreover, it is mulling a $225 million bond issue designed to defray delay costs, spokesmen for the city said last week.

The Denver International Airport was supposed to open in March, but a decision was made in May to postpone its opening until a computerized baggage system could be brought on-line.

Dollars down the drain

To date, the airport has cost the city about $3.2 billion, not including airline and Federal Aviation Administration costs for constructing the facilities. The daily $1 million cost of the delay includes operations costs and about $500,000 for interest on bond issues. Airlines are paying 80% of the interest and the city 20%, Denver officials said.

The airport's baggage system, which was to provide unified handling of baggage for all airlines, has cost $193 million. The automated system, which uses IBM-compatible PCs to direct 4,000 baggage carts over a 20 mile-long automated cart system, was built by BAE Automated Systems, Inc. in Carrollton, Texas [CW, May 16]. However, tests showed it damaged baggage and was unreliable because it directed luggage to the wrong flights. Consultants have yet to resolve the problem.

Heeding the advice of lawyers, BAE officials would not comment on the problem. Meanwhile, until the baggage system is fixed, Denver's Stapleton Airport will continue to serve the city.

To open the new airport, Denver has agreed to spend $50 million more to build a conveyor-driven system that relies on people rather than computers to direct baggage-loading. Denver plans to contract with Rapistan Demag Corp. in Grand Rapids, Mich., to build the conveyor-driven system, said Briggs Gamblin, a spokesman for Mayor Wellington Webb. It is even possible that the conveyor and computer-driven cart systems could be combined as the BAE system comes on-line, he added.

Last Wednesday, city officials met with managers

from United Airlines, the largest carrier that will serve Denver, to discuss the ongoing baggage-handling crisis. The airlines still want the BAE system to be repaired, Gamblin said last week, but United managers were told of the city's decision to install the Rapistan conveyor system to get the airport open by 1995.

Most U.S. airports use separate conveyor-driven baggage systems in each airline's terminal area, but Denver still plans to have a unified system.

The Rapistan system will rely on traditional manual baggage-transfer methods used at most airports. Rapistan has built baggage systems for the Vancouver airport in British Columbia and the Bangkok Airport in Thailand, according to the company.

Guaranteed shipment

This time, the city has assured timely shipment of the conveyor-driven system by including provisions that offer a bonus for early completion and add penalties for running late, said city attorney Steven Niparko. The target date is now Dec. 31 — nine months after the original March 9 opening date.

Ironically, Denver International's baggage system was supposed to make it more efficient than other airports, Briggs said. But Denver has not entirely given up on the idea. "It will shave minutes off turnaround time per flight and hopefully hours per day," he said.

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Computer Industry

Thinking Machines succumbs to Chapter 11

Analysts, users remain high on MPP's promise

By Ellis Booker

After nearly a year of searching for investors or a cash-rich buyer, pioneering supercomputer company Thinking Machines Corp. entered Chapter 11 bankruptcy protection last week.

The 10-year-old Cambridge, Mass., firm said it will immediately fire about one-third of its 425 employees. It will retain a small group to support the 112 computers it has sold to date. The firm also hopes to license its technologies to others — which will be difficult, analysts said, now that companies such as IBM and AT&T Corp. are selling parallel systems.

Thinking Machines, which was lauded for its early implementation of so-called massively parallel processing (MPP), lost $20 million on sales of $82 million last year. Its woes, however, should not be taken as an indication that MPP has been oversold or that this form of high-performance computing will not have a dramatic impact on commercial systems in the coming years, according to industry analysts.

"Clearly this was far more indicative of Thinking Machines' situation," said Jeff Canin, a technical analyst at Salomon Brothers, Inc. in San Francisco. Had the company kept its expenses in line with realistic revenue expectations, it would not have run aground, according to Canin.

Thinking Machines was also badly hit by the downturn in government funding of high-performance computing projects.

The upside

In the shadow of the Thinking Machines shake-up, other high-performance computer vendors were making news. Pyramid Technology Corp. in San Jose, Calif., announced a joint development and distribution deal with Information Management Co. in Edison, N.J., for distributed transaction processing tools. Cray Computer Corp. announced a $9.2 million joint project with the National Security Agency to develop a Cray-3/Super Scalable System, combining vector and scalable parallel processing.

"In my view, they never developed the organizational focus on the commercial market you'd need to break in," said Richard Winter, president of Winter Corp., a database consultancy in Cambridge, Mass.

Thinking big

Over the next couple of years, Winter predicted, databases will offer large-scale decision support using MPP or scalable multiprocessor architectures. A massively parallel system, Winter noted, can churn through a giant customer database 100 times faster than the fastest serial mainframe.

In fact, one of the most publicized MPP-based decision-support applications, American Express Co.'s Quantum project, is based on Thinking Machines' CM5 system.

Although details on Quantum are sketchy, the project is aimed at "data mining" the half-trillion bytes of data relating to how the company's 35 million credit cards have been used for the past three years.

"The program is up and running, and the equipment works well," said Bob Drummond, president and chief executive officer of Epsilon, Inc., the Burlington, Mass., subsidiary of American Express that built Quantum.

"We absolutely believe in [this technology]. . . . We know it works," Drummond said. While "very sad" about Thinking Machines' situation, Drummond said Epsilon never put all its eggs into the Thinking Machines basket: Its next two applications, for different customers, will run on a Sun Microsystems, Inc. SPARCstation and an IBM Powerparallel System SP2.

Merger boom doesn't faze software industry

By William Brandel

Mergers and acquisitions of software companies are at a five-year high, according to a study released last week by Broadview Associates, an investment banking firm in Fort Lee, N.J.

Transactions in the software and information services sector of the computer industry doubled from $2.7 billion in the first six months of last year to $5.4 billion during the same period this year, the study said.

"This level of merger and acquisition activity is good news for software consumers," said Alec Ellison, managing director at Broadview. "Merged larger companies can offer a broader breadth of products. The end result is more competition and lower software prices."

This spike was due mostly to a number of large acquisitions that occurred during the first six months of this year. Eight of these acquisitions were valued at more than $100 million each, totaling $2.8 billion.

While the Broadview numbers may measure an uptick in merger activity in the software industry at large, they do not indicate any major shifts or new trends, said Jeffrey Tarter, editor of "Soft Letter," a newsletter in Watertown, Mass.

Tarter said when Novell, Inc.'s purchase of WordPerfect Corp. is removed from the mix — a deal that placed the value of the combined companies at $1.8 billion — it was actually an average year in the PC software industry. Moreover, even with the flurry of merger and acquisition activity, the face of the PC software industry has not been altered, he said.

"Almost all the same applications that were available on the market before are available today," Tarter said.

However, some significant changes have occurred in recent months. For example, history was made with the merger of Adobe Systems, Inc. and Aldus Corp., a deal valued at $525 million. Because the combined companies would have dominated the design and illustration market, the Federal Trade Commission for the first time said it would block the merger unless Aldus sold Freehand, its illustration and design program. Aldus must now turn the software package over to its former owner, Altsys Corp., by the end of next year.

Changing the deal

The way acquisition transactions are financed has changed dramatically in the past year as well. Stock deals accounted for 45% of transactions in the first half of this year, compared with 35% during the same period in 1993. By comparison, cash deals accounted for 34% of mergers during the first six months of this year, down from 44% during the comparable period in 1993.

'No-names' take off

By and large, the software industry enjoys continued growth, said Jeffrey Tarter, editor of the "Soft Letter" newsletter. While the top-end personal productivity market has matured, a new breed of no-name software applications is now moving up in the market, he said.

For example, Edmark Corp. in Redmond, Wash., is a $10.1 million concern. Edmark makes educational software for DOS and Macintosh platforms. Micro Star Software in Carlsbad, Calif., is a $4 million company that makes computer games. Microtac Software, Inc., a $5 million company in San Diego, makes language-translation software. Many of these small companies are enjoying a growth rate that exceeds 100% per year, Tarter said.

Core competence

Apple is enjoying relatively good financial health right now and has just completed a difficult hardware transition, but I sense that the hard part is just beginning for The Other PC Company.

Apple is arguably the most consistently innovative company in the business. But it is going in a lot of different directions at the same time, and unless it gets focused, it may spin out of control.

Depending on whom you talk to at Apple today, you'll hear that the company is committed to the corporate market, small business, the home, education, personal digital assistants, electronic services and set-top boxes. No one has been able to establish a beachhead in all those markets. And Apple won't either because it's got other worries right now.

First, there's the relentless march of Microsoft and Intel. Apple devotees sniff at the clumsiness of Windows, but the fact is that with technologies such as Plug and Play, Peripheral Component Interconnect, OS/2 and Chicago, PC makers have done a credible job of recreating most of the major features that made people buy Macintoshes in the past. And you can buy PCs from a couple thousand different suppliers.

Meanwhile, Apple has yet to license its System 7 operating system, which increasingly isolates it from the mainstream. The company isn't promising a major overhaul of System 7 until a product code-named Gershwin ships in 1996. Gershwin will feature preemptive multitasking, something PC users have had since 1992. While its list of features, including intelligent agents and three-dimensional graphics, sounds impressive, there's plenty of time for Microsoft to launch a vapor strike of its own.

Then there are the growing pains that Apple will continue to face in moving from the 68000 architecture to the PowerPC. The Power Macintoshes certainly are fast, and Apple has all but removed the Macintosh price premium. But native Power Macintosh applications have been slow in coming, and users won't buy Power Macintoshes to run the applications they have a little more slowly.

If Apple is as serious about the corporate market as it claims to be, it needs to train its guns on getting Power Macintosh commitments from software suppliers (see story page 41), improving the product's rudimentary Windows support, licensing System 7 to reputable hardware makers and marketing the hell out of the machine's price/performance advantage. With that much to do, it's hard to see where marginal projects such as EWorld or the Newton fit in.

Apple can try to be all things to all users and settle for 10% corporate market share. Or it can focus on doing one or two things really well. Right now, it seems to have selected option A. I'm not sure that's such a great choice.

Paul Gillin, Editor
Internet: *pgillin@cw.com*

I'D JUST LIKE TO SAY, THE BOARD HAS SUPPORTED MR. AKERS RIGHT UP TO THE VERY END.

THE BOARD

IBM THINK OR SWIM

Rich Tennant is on sabbatical. This is one of his classic cartoons from 1993.

Letters to the editor

Forgot the Mac

"Multimedia Comes Down to Earth" [CW, Aug. 1] outlined only a small handful of the many multimedia packages available. I can't believe you completely left out the biggest technology leap in desktop multimedia this decade.

Multimedia started on the Macintosh and is still best there. The tools and abilities of the Mac greatly outweigh those of the PC. So why did you barely even touch that platform?

Quicktime, a sound and video capture and playback technology invented by Apple and available on Macs and PCs, is the heart of the best multimedia packages available today. The best part of the article was the title graphic, which is a collage of Quicktime movies.

Calvin Carter
Dallas

DOJ should mind its own business

Microsoft's pricing formats and disclosure contracts are a matter to be decided between Microsoft and its customers alone.

Antitrust statutes are nonobjective and infinitely elastic, and they represent the law of guilt after the fact. Apart from fraud, for which adequate laws exist, there is no such thing as an "unfair" trade practice. Capitalism is founded on the principles of property rights, freedom of contract and freedom of trade, not some loopy half-baked ideas like "enforced competition" and "level playing fields" [CW, July 25]. Commercial law

should not be based on inappropriate sports metaphors and hysterical conspiracy theories.

Brad Aisa
Toronto

Power play

As a 40-year veteran who has been a supporter of IBM and Sun for many years and who needs the help of both, I offer this simple, if perhaps unoriginal, suggestion.

IBM should consider dropping support of its proprietary operating systems, such as AIX and OS/2, and equip its new PowerPC with Sun's Solaris and Next's NextStep. Applications would be forthcoming immediately from the independent software vendors. Sun should consider dropping SPARC and launch a new line of hardware based on the PowerPC.

Robert L. Kay
Martin County, Fla.

IBM double-talks

I was not surprised by Richard Sullivan's (IBM) response to "So long, CC:Mail" [CW, July 11], which accurately indicated that IBM would cease its policy of proactive marketing of CC:Mail while actively competing against it.

The double-talk from Sullivan reminds me of IBM "strategic product" statements that in the past have turned to vapor as conditions changed. I had hopes that the new IBM leadership would not

tolerate this kind of public folly from its managers. Customers are too astute today to be taken in by this fluff. Thank you for continuing to report accurately on these changes.

Carter Priess
Bloomington, Ill.

Wait for the sequel

Carole Patton hit the nail on the head with "Chicago lacks beef" [CW, July 11]. As a LAN administrator, I get tired of hearing users proclaim that Chicago will become the panacea of graphical user interfaces. Our organization is pushing technology on a reluctant sales force and betting that Chicago will increase usability by allowing them to, in Patton's words, "shuffle icons on the desktop." Microsoft Explorer is not as intuitive as our interim solution, PC Tools for Windows 2.0.

I am content to wait until 4.1 hits the streets.

Richard Alfini
Lakewood, Calif.

■ Computerworld welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Laberis, Editor in Chief, Computerworld, P.O. Box 9171, 375 Cochituate Road, Framingham, Mass. 01701. Fax number: (508) 875-8931; Internet: letters@cw.com. Please include a phone number for verification.

Lessons to learn from the leader

Philippe J. Amouyal

Microsoft's settlement of U.S. and European Economic Community antitrust charges is viewed as a victory for the software leader. Scores of competitors have criticized regulators for irresponsibly letting Microsoft continue its dominance, and many articles have focused on Bill Gates' toughness in negotiations.

All this talk may lead us to miss the central reason that Microsoft sits at the top of its industry: It delivers more valuable software more effectively than its competitors. Performance drives Microsoft's dominance more than predatory practices.

The Microsoft debate centers on the operating system control that IBM handed the company and how that control provides it an unfair edge in applications. Put another way, Microsoft was born with a silver spoon in its mouth and has been taking unfair advantage of its privileged status.

There is strong appeal to the story of a 20-year-old taking advantage of a lucky break. Some of it may even be true, but Bill Gates is not Forrest Gump: He has built a high-performance business organization.

Despite having its share of failures and delays, Microsoft beats other software developers in time-to-market, productivity and quality. It also marries strong software execution with the subtle ability to zero in on customer needs.

A trip to Redmond, Wash., leaves the visitor impressed with the abilities, vitality and purpose of even low-level staff. Having lured young people from the best schools, Microsoft does not make their life easy by giving them simple directions and priorities. Rather, it lets them struggle with the ambiguities of running a complex business.

If more companies followed this lesson in general management, Microsoft would have a much harder time sustaining its dominance.

Microsoft is a strong engine that has been able to create significant value by attacking unsatisfactory compromises. Along with Novell, Oracle and others, it has added individual layers of value in the form of standards that free customers from the lock-in of proprietary suppliers.

In the process, much of the rest of the computer business has taken on strong commodity characteristics. It may not be good for IBM or Digital, but a commodity-based market is good for customers.

This trend toward standard layers is now extending from the desktop to client/server networks and enterprise computing, and from information technology to entertainment and other consumer markets. Enormous pressure will be maintained on all players in the value chain, and we will enjoy near-commodity prices for large chunks of the systems we buy. So what if Microsoft or companies like it make high returns on some elements?

Microsoft's success is not guaranteed. It may stumble in its gravity-defying performance by losing its nimbleness, its software quality or its smarts and creativity. It also faces capable and deep-pocketed competitors in its new ventures.

Whatever happens to Microsoft, customers will continue harvesting benefits from its success. With the antitrust action finally behind it, the company can now focus on delivering those benefits and trying to sustain its success against growing odds. The regulators not only acted responsibly, they were right.

> *Performance, not predatory practices, drives Microsoft's dominance.*

Amouyal is vice president of The Boston Consulting Group and heads up that firm's East Coast high-technology practice.

Corporate architecture must play politics

Paul A. Strassmann

Corporate and government bookshelves are filled with dust-covered architectural plans conceived by task forces, consultants and vendors. These are idealized technological concepts that do not link to the power structure they are supposed to support. There can be no enterprise architecture without a direct link to the balance of power.

The authors of architectural documents that define only technologies confuse form with substance. The architecture of how information can be distributed must always be subordinated to decisions of who can use it.

A technical IS architecture tells us how to build information systems. In contrast, information politics tells us how a human organization already built can be successful and adapt to future changes. These are not separate but intertwined relationships.

A technical IS architecture deals with connections among physical and programmed elements. Information politics deals with interactions among human beings.

A technical IS architecture is typically imposed unilaterally and enforced by technological means. Information politics, in the sense I am using it, must reflect social consensus that is multilateral and negotiated.

A technical IS architecture provides a framework for the capture, storage and manipulation of data. Only governance can tell you how information should be organized so that it can be converted into knowledge. Implementation of a technical "architecture" should be made only after you have established clear political governance. Politics always comes before technology.

Mainframe-dominated corporate information departments failed because they tried to impose a well-reasoned technical architecture on an environment that became increasingly varied. Customers demanded solutions that fit a political need more than an economic rationale. That lesson should be heeded by anyone commissioned to write yet another technical architecture document.

One of the basic principles of any information architecture should be a strong bias for giving priority to processing external information before processing internal information. Competitive forces are external whereas bureaucratic forces are internal. Both forces are dangerous, except that the external threats are swifter and must be dealt with first.

The capacity to translate external signals into responses determines how well an organization copes with external challenges. An information architecture is one way for an organization to coordinate itself first for survival and then for prosperity.

There is no such thing as a standard enterprise architecture. It must be as unique as a fingerprint because enterprises differ in how they function. The adoption of an enterprise architecture is therefore one of the most urgent tasks for top executive management. Fundamentally, an information architecture is a political doctrine that specifies who will have what types of information to make decisions. Never delegate the conception of an architecture plan to computer experts because they will judge it only on its technical merits.

> *Who can use information is more important than how it is distributed.*

Strassmann is a consultant in New Canaan, Conn., and author of *The Business Value of Computers* (1990) and *The Politics of Information Management* (1994).

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• *4-MB RAM, expandable to 64-MB*	• *4- or 8-MB RAM, expandable to 96-MB*	• *210-MB, 14-ms Fast-IDE hard drive[1]*	• *Two available 32-bit PCI expansion slots*	• *Four mass storage shelves (three front accessible); five expansion slots*
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	• *ISA Autoconfiguration utility (Plug-n-Play)*	• *Integrated Desktop Management Interface (DMI)[3]*	• *Free three-year limited warranty for parts and labor[2]*	• *Integrated Desktop Management Interface (DMI)[3]*
	• *Integrated Desktop Management Interface (DMI)[3]*	• *Free three-year limited warranty for parts and labor[2]*		• *Free three-year limited warranty for parts and labor[2]*
	• *Free three-year limited warranty for parts and labor[2]*			
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PeopleSoft answers 4 critical client/server questions.
(No asterisks, no equivocations.)

1. How many years of client/server experience do you have?	6
2. Do you have both financial and human resources applications available and in production?	Yes
3. Are all your applications developed from the ground up for client/server?	Yes
4. How many RDBMS platforms do your applications run on?	6

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Desktop Computing

Borland delivers on promise to developers

By William Brandel

When Borland International, Inc. shipped dBase for Windows earlier this month, it did not just deliver on a product that was four years late. The company also delivered on an 18-month-old promise to provide developers with the means to develop to a common database engine across a number of applications at a user site.

DBase for Windows joins a growing number of Borland and Novell, Inc. applications that can take advantage of Borland's Database Engine (BDE) technology. For example, Novell's (formerly Borland's) Quattro Pro spreadsheet and WordPerfect Corp.'s InForms Personal Information Manager take advantage of BDE. Paradox for Windows, Interbase and soon Borland's ReportSmith report generator will also support BDE when it ships.

BDE is a boon to developers who work with Windows and any of the aforementioned applications be-

Borland's dBase for Windows *takes advantage of its Database Engine technology, which allows developers to work with a common database engine across applications*

cause it provides one engine to which they can write. Developers said they like BDE because it allows them to concentrate on building programs that can run against applications that support BDE instead of focusing on optimizing back-end services.

"The developer can just write a few routines that call functions to this engine," said Tom Hovis, a principal of Visual Solutions, a consultancy in Santa Clarita, Calif. "The engine doesn't care what client is calling it; it will just return what is asked. You give it the query information and value, and boom, it's there."

BDE supports Integrated Database Application Programming Interface, Borland's database interface, which in turn supports Microsoft Corp.'s Open Database Connectivity (ODBC). This means the engine also gives developers the ability to build applications that take advantage of a bevy of back-end services. This is beneficial to corporate developers who often have to build application front ends that must

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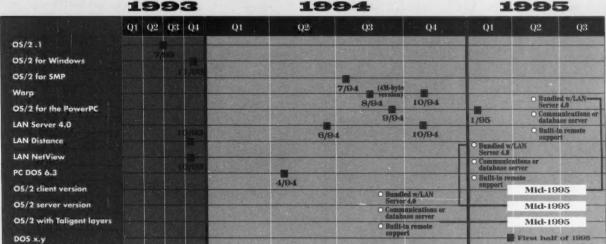
Can IBM move at "Warp" speed?

The slim Warp version of OS/2 paves the way for a string of additions to the OS/2 family

■ Beta version
■ Final version

	1993 Q1	Q2	Q3	Q4	1994 Q1	Q2	Q3	Q4	1995 Q1	Q2	Q3
OS/2 .1			■								
OS/2 for Windows		7/93		■							
OS/2 for SMP				11/93 ■							
Warp							7/94 (4M-byte version) ■	10/94 ■		○ Bundled w/LAN Server 4.0	
OS/2 for the PowerPC							8/94 ■			○ Communications or database server	
LAN Server 4.0							9/94 ■		1/95 ■	○ Built-in remote support	
LAN Distance			10/93 ■			6/94 ■		10/94 ■			
LAN NetView				■					○ Bundled w/LAN Server 4.0		
PC DOS 6.3			10/93 ■						○ Communications or database server		
OS/2 client version						4/94 ■			● Built-in remote support		
OS/2 server version							○ Bundled w/LAN Server 4.0			Mid-1995	
OS/2 with Taligent layers							○ Communications or database server			Mid-1995	
DOS x.y							○ Built-in remote support			Mid-1995 ■ First half of 1995	

By Ed Scannell

While IBM's Personal Software Products division has had a pretty good 12 months with OS/2 2.1 — sales crossed the 5 million unit mark in the spring — the company faces an even more critical period during the next year.

With Microsoft Corp. expected to deliver a shiny new version of Windows NT this year and its first 32-bit desktop operating system, code-named Chicago, early next year, it is critical that Personal Software Products deliver its upcoming operating systems on time.

Next up is Warp, the code name for the 4M-byte version of OS/2. Warp will serve as the base for several versions of OS/2 over the next year or so. Like OS/2 for Windows, it can be loaded directly on top of existing copies of Microsoft's DOS and Windows.

Besides increased performance in less memory, Warp features a snappier-looking interface with three-dimensional icons, support for Microsoft's Windows for Workgroups 3.11 and a much simplified installation process.

Personal Software Products recently announced it will release a BonusPak with Warp that consists of a variety of productivity desktop applications as well as IBM's Person-to-Person conferencing software, which permits immediate access to on-line services and a white-board feature.

Warp will serve as the bedrock for the client and server versions of OS/2 expected in the first half of next year.

Already, one problem area appears to be a version of OS/2 for the PowerPC. The company hoped to ship that product by year's end, but with the package not expected to reach serious beta testing until late fall, it is unlikely it will be available in general release until late in the first quarter of 1995.

Voice recognition takes on the desktop

Falling prices, Windows-based systems feed trend

By Ellis Booker
CHICAGO

■ **New products, pricing and standards suggest that vendors of voice recognition systems are moving rapidly toward a single goal: the speech-enabled desktop.**

Fueling activity in the $300 million industry are the arrival of Windows-based systems and tumbling prices that have cracked the $500 barrier.

The trend toward automatic speech recognition looks strong, according to Voice Information Associates, Inc., a market research firm in Lexington, Mass. (see chart at right). The firm projects an overall growth rate in automatic speech recognition of 35% between 1992 and 1997. That growth will be led by "computer control" and telephone applications.

Meanwhile, according to industry observers, the big news in voice input software is that the PC platforms it runs on — typically 33-MHz 486s or higher — are now powerful enough not to require a specialized digital signal processor chip on a separate card.

For example, when Dragon Systems, Inc. in Newton, Mass., announced the Windows-based implementation of its DragonDictate product in late June, it said the system would work with standard 16-bit sound cards from a variety of sources.

The new product family ranges in price from $395 to $1,695, depending on vocabulary size.

Users want to talk
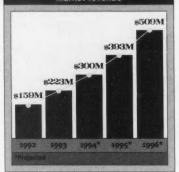
But although Dragon is closer to a shrink-wrapped product than any other to date, neither it nor its competitors have committed to a mass-market channel, noted William Meisel, editor and publisher of "Speech Recognition Update," a newsletter in Encino, Calif.

"The last and by far the biggest impediment to a mass market is the fact that these systems take significant [system] resources," Meisel said, adding that although they work well on 486-class machines, the systems require at least 8M bytes of RAM for even the smallest vocabularies.

Nevertheless, users seem increasingly interested in the concept of orally addressing their machines either to control a piece of software or dictate a document.

Automatic speech recognition market revenue

$159M — 1992
$223M — 1993
$300M — 1994*
$393M — 1995*
$509M — 1996*

*Projected

Source: Voice Information Associates, Lexington, Mass.

Meisel cited a recent Microsoft Corp. survey listing speech interface as one of the Top 3 interests among end users.

Still, even leading vendors remain cautious about predicting that voice will become a dominant form of input any time soon.

"We don't want to repeat the hype and disappointment that the pen interface people encountered," one industry executive said.

Howard Fields, director of marketing at IBM's speech and pen business unit, argued that the real challenge is to offer users alternative input systems such as speech and pen "when they need them ... so the user can slip between modes easily."

Fields also made the oft-heard argument that speech will not become a mass phenomenon until systems support continuous speech. Currently, discrete speech systems, whereby users must pause between words, are the rule.

One encouraging sign is that the industry has begun to coalesce around standards backed by Microsoft and WordPerfect Corp.

Microsoft has announced a Digital Signal Processor Resource Manager Interface (RMI) specification for Chicago, the next version of Windows. The RMI provides a vendor-independent interface for signal processing resources, such as those found in digital signal processors. Supporters of the RMI include Compaq Computer Corp., IBM Microelectronics and Intel Corp.

A consistent voice

Separately, Microsoft announced in late June an open speech application programming interface (API) specification for its 32-bit Windows platforms. The first implementation of the API will support Chicago and Windows NT. The company's plans come on the heels of those of WordPerfect, which a week earlier launched an effort to define a common speech recognition API.

The two efforts share many of the same vendor participants, including Dragon Systems and Kurzweil Applied Intelligence, Inc., two of the Top 3 speech vendors. The third, IBM, is following the WordPerfect effort.

The WordPerfect group said it hopes its API will provide a consistent voice interface for applications and make voice input more efficient for some tasks than a keyboard or mouse.

WordPerfect plans to offer speech-enabled versions of its Windows applications by early next year. In the fourth quarter, it is scheduled to release the API as part of its PerfectFit Software Developer's Kit.

Briefs

Necx offers on-line shopping
Necx, a Peabody, Mass.-based distributor of integrated circuits and computer products, has announced it will make its Desktop Channel — an on-line computer shopping network — available to resellers through a new partnership program. The Desktop Channel gives users toll-free access to browse through more than 20,000 PC products from more than 800 vendors. Under the new program, resellers will be able to offer the service to their customers.

Alaris, NexGen pair up
Fremont, Calif.-based **Alaris, Inc.** will serve as a primary developer and manufacturer of motherboard and system products based on **NexGen, Inc.**'s, Nx586 Pentium-class processors, under the terms of an agreement between the two companies.

AT&T GIS adds to Globalyst
AT&T Global Information Systems has announced new Pentium configurations of its Globalyst desktop system line. The new 90-MHz Pentium-based Globalyst 600 systems feature 64-bit graphics, 8M bytes of memory, 2M bytes of dual-ported video RAM, up to a 520M-byte hard drive and 256K bytes of write-back cache. They come preinstalled with Ethernet, Token Ring or WaveLAN adapters. The price for such a system starts at approximately $3,618.

The company also announced a new line of systems available in several 486 options with prices starting at about $2,000.

Microsoft hits Power Mac users with hefty resource demand

By Mark Halper

Less may sometimes be more, but Microsoft Corp. was apparently not in a minimalist mind when it developed its resource-hungry office productivity software for the Power Macintosh.

Microsoft Senior Vice President Pete Higgins said the company recommends that users set aside 35M bytes of hard disk space for Microsoft Office 4.2 for the Macintosh. The power user will want 60M bytes, while some users could get away with as little as 18M bytes, he said.

Memory demands may also surprise Macintosh users accustomed to applications that in the past required less space than their Windows counterparts. Microsoft recommends users load their Power Macintoshes with at least 8M bytes of RAM for the Office package. Office's constituent programs — the Excel spreadsheet, Word word processor and PowerPoint presentation — require 4M bytes, 4M bytes and 6M bytes, respectively.

Microsoft plans to ship Excel for the Power Macintosh next month and Word and PowerPoint in October.

For Power Macintosh and 680x0-based Macintosh users, Office's resource-demanding architecture will arrive on the heels of another memory-intensive piece of software — Apple Computer, Inc.'s forthcoming System 7.5 operating system. Apple is urging users to deploy 16M bytes of RAM for System 7.5's advanced drawing and communications features or 8M bytes if they are not using these features.

Adding it up

Since the Power Macintosh comes standard with 8M bytes of RAM, users who adapt both Office 4.2 and System 7.5 must add at least 8M bytes of RAM to their systems and perhaps more. With memory selling for about $300 per 4M-byte module, users will shell out $600 or more to outfit their Power Macintoshes.

The news of Office's requirements received mixed reviews from Macintosh users, ranging from annoyance to begrudging acceptance.

"This is the continuing saga of inexpensive hardware resources breeding larger applications," said Dave Lustig, manager of network services at Bose Corp. in Framingham, Mass.

As an information systems worker, Lustig runs 32M bytes of RAM on his Power Macintosh, but the average worker has about 8M bytes. With software requiring twice that amount, any firm will be challenged "to keep the company consistent in the version of a program it runs," Lustig said.

Valerie Takumoto, a technical staff member at The Aerospace Corp. in El Segundo, Calif., said she shudders at the thought of upgrading some 2,000 Macintosh and Power Macintosh users in her organization. "How long do you think it will take me to upgrade 2,000 users?" she asked.

Takumoto said part of the memory demand comes from some of the fancier but less important features Microsoft built into Office products such as Intellisense, Word's self-correcting spell feature.

"They put things in I don't really need," Takumoto said. "Intellisense is cute, but I have a lot of people who can do without it. Microsoft has made a memory hog and a hard drive hog."

JOSE E. BRUZUAL

Users to Microsoft: What took so long?

Power Macintosh users received Microsoft's recent announcement of near-term availability of the Office software suite for the Power Macintosh as bittersweet news.

Office 4.2, due to ship in part next month and in full in October, will be a sweet addition to the still fledgling world of native Power Macintosh software because without it, Power Macintosh users lack the highly popular Excel spreadsheet program that is tailored to the system.

At the moment, they are still settling for emulated versions written for the 680x0-based Macintosh or for Windows machines. The Windows version is painstakingly slow on Power Macintoshes.

But users said they were angry that Microsoft is just now offering Office for the Power Macintosh.

"I'm going to be screaming at them," said Dave Lustig, manager of network services at Bose Corp. in Framingham, Mass. "What Microsoft has done with the PowerPC is reprehensible. It was unable to get out the most widely used spreadsheet in a timely manner."

Valerie Takumoto, a technical staff member at The Aerospace Corp. in El Segundo, Calif., was equally outraged. "What they said to the Apple world was, 'We're not going to change our schedule for you guys,' " she said.

Microsoft Senior Vice President Pete Higgins explained that the company waited to make sure it had reliable, working versions available.

— Mark Halper

Borland

connect to a number of databases using different query protocols. The Borland paradigm also provides benefits to its development/user base without locking out other popular desktop databases such as Microsoft's FoxPro or Access.

"If you're developing in C, C++, Pascal or a language like that, then BDE becomes quite important to a corporate user," said Ralph Mickelson, partner at OmniVision, a development consultancy in Highland, Calif.

Because BDE is compatible with ODBC and provides native connections to different database engines, it broadens the application functions that a corporate developer can build into an application. It also hides many of the function nuances that have been built into applications as they evolved.

"For example, dBase and Paradox have different indexing structures," Mickelson said. "So without BDE, you would have to index each differently. With BDE, you don't have to worry about the applications' incompatibilities."

While BDE targets a developer audience, its capabilities ultimately affect database end users. Because it allows the developer to incorporate more flexibility into back-end services and applications, end users — albeit unknowingly for the most part — will be the ones who take advantage of these capabilities.

"Now if an end user wants to copy an Oracle table over to dBase, they don't have to worry about the data types or formats," Hovis said. "But Access, which is [compatible with] ODBC, would force you to use some type of format converter to do the same thing. You would have to do something like change the table to a different format and then try to copy it again."

Of course, BDE technology is based mostly on Borland's and Novell's application technology and is confined to database-type applications so far.

"There is no question that for customers it is good have a common engine across product lines," said Nicole Roth, an analyst at International Data Corp. in Framingham, Mass. "But whether one person wants to use just Borland's products is another question."

PDA market stays shaky but active

By Michael Fitzgerald

The plodding personal digital assistant (PDA) market took one step backward and three steps forward recently, but the net effect was very little ground gained.

The loss of EO, Inc., a pioneer in the PDA world, "doesn't mean a market for those kinds of devices won't exist," said William Ablondi, an analyst at BIS Strategic Decisions in Norwell, Mass. "It's really a matter of it being a product before its time."

EO's death did not deter several other announcements of handheld computers. Hewlett-Packard Co. released the 200LX, an updated version of its 100LX pocket organizer; Dauphin Technology released the DTR-2, an update of its earlier handheld; and Texas Microsystems, Inc. released the prototype of its Soldier's Computer, nicknamed Grunt.

Of the three, analysts and users responded most favorably to HP's strategy. HP has had the most market success, selling some 200,000 units of its first two handhelds, which came with Lotus Development Corp.'s 1-2-3 spreadsheet. The 100LX's screen had a tendency to detach from the body of the unit, and the new version fixes that problem. A major new feature is Quicken, Inc.'s Pocket Quicken, a business expense and personal finance organizer.

"The ability to track expenses on the road is really valuable," said Stanley Dobrowski, data center manager at Bergen County Utilities Authority in Ferry, N.J.

John Beaton, palmtop product manager at HP, said the 200LX was "the last thing you'll see from us in the handheld realm in 1994." He said HP was considering introducing a PDA with the Geos operating system from Geoworks, Inc., which HP bought a stake in last year. Beaton also said HP may consider putting 386-class power in the organizer form factor by adding Intel Corp./VLSI Technology, Inc.'s stunted handheld chip set, known as Polar.

Revamped replacement

Meanwhile, Dauphin, in Lombard, Ill., brought out a 2.7-pound version of its DeskTop Replacement (DTR) product. The DTR-1 has been a disappointment, selling less than 4,000 units, according to Alan Yong, Dauphin's president.

The company has completely revamped the 9-in. by 5½-in. product, giving it a faster 25/50-MHz IBM 486SLC2 chip, adding PCMCIA and wireless communications capabilities and expanding the keyboard from 75% of full size to 90%. It also has a 128M-byte hard drive and 4M bytes of RAM.

The $3,500 DTR-2's main feature is a built-in sound system that can recognize up to 500 words for voice annotation, data input or menu navigation.

"The reason most of our customers are currently evaluating DTR-2 is because of the voice recognition capability," Young said.

Analysts said they think Dauphin offers an interesting technology but remain lukewarm about the company's prospects in the market.

Meanwhile, Texas Microsystems introduced a prototype for its Soldier's Computer, a 3½-pound box that fits in the thigh pocket of soldier's fatigues. It offers a built-in Global Positioning System. Rex Zerger, senior vice president at Texas Microsystems, said the Houston company will bring a commercial version of the heavily ruggedized product to market within the next year. The product will cost $3,000 in that version and will be targeted at vertical markets.

"We see opportunities for data collection applications, digital imaging, insurance adjusting and all those sorts of things, but we also think it'll be useful to people like police officers," Zerger said.

Still, it is not clear whether Texas Microsystems' biggest potential customer, the U.S. Army, will use the Soldier's Computer. The Army is not looking for mainstream procurement until 1999, and that date depends on other research projects such as virtual displays.

Texas Microsystems' *Soldier's Computer is designed to fit in the thigh pocket of a soldier's fatigues*

AST expands desktop lines

By Jaikumar Vijayan

In what analysts view as a bid to plug a gaping hole in its desktop product line, AST Research, Inc. recently introduced a midrange PC to its Bravo line even as it replaced its Premmia LX with a high-end desktop offering.

Both the Bravo MS and Premmia MX systems, which began shipping this month, are available with a variety of processor options, ranging from an Intel Corp. I486 to a 100-MHz Pentium. They feature 64-bit Peripheral Component Interconnect local bus graphics, Plug and Play capabilities and a Desktop Management Interface.

The AST announcement may have come not a moment too soon, at least as far as one large AST user was concerned.

"Frankly, we have been rather disappointed with AST over the last one year or so," said Douglas Murphy, director of management systems at Comcast Corp. in Philadelphia. "They have not kept up with Compaq, Dell or IBM."

While he welcomed AST's new product offerings, Murphy maintained that the company would have its work cut out to convince customers such as himself to continue with AST as a vendor.

"AST was a viable contender with reliable products offering good price/performance. Now they are playing catch-up, and they have to prove why their products are different before I swing any more of my dollars their way," Murphy said.

AST hopes to induce more customers to do this by delineating its business products into four categories and fleshing out its offerings with its new, aggressively priced midrange PC, according to a company spokesman.

"We play very well in the high end and the entry level, but there was a hole in the midrange where we didn't have any offering. The new Bravo MS plugs that hole," the spokesman said.

Analysts agreed that the Bravo MS addresses a growing customer need for midrange corporate desktops.

AST "had nothing in the midrange, and as far as AST customers were concerned, it was a hole that needed to be filled," said Jennifer Munson, an analyst at WorkGroup Technologies, Inc. in Hampton, N.H.

The Bravo MS is AST's top offering in the line of value desktops and joins existing Bravo LC, LP and LT models. The high-end Premmia LX models, which come with a 64-bit graphics card and up to 730M bytes of memory, are targeted at the computer-aided design and manufacturing markets, according to AST.

Price comparison

The Bravo MS 4/66d with 8M bytes of memory, a 420M-byte hard drive, 1M byte of video RAM and a dual-speed CD-ROM will sell for about $2,300. A similarly configured Premmia MX 4/100t based on an Intel I486DX4 with a 256K-byte cache will cost roughly $3,000.

Iges Data Analysis, Inc. has announced Calsview for Microsoft Corp.'s Windows and Windows NT, graphics viewing and redlining software.

According to the Melrose Park, Ill., company, Calsview for Windows also provides geometric measurement and format conversion for two- and three-dimensional computer-aided designs and metafile, vector and raster formats.

Users can control the display of levels, layers, entity visibility and style.

An application programming interface is provided for integration with data management systems.

Prices start at $595.
▶ *Iges Data Analysis*
(708) 344-1815

Fathom Technologies has introduced Portable, a portable tape drive that enables midrange computers to back up both midrange systems and PCs.

According to the Longmont, Colo., firm, Portable backs up PCs using IBM tape commands on System/36, AS/400 and Portable software.

The product comes in two versions: a 1G-byte, ¼-in. tape model for System/36 users and a 10G-byte, 8mm tape model for AS/400 users.

Prices range from $3,995 to $5,895.
▶ *Fathom Technologies*
(303) 678-7870

The BCB Technology Group, Inc. has announced Dart-Assist, a handheld PC-based digital voice recorder.

According to the Woodbridge, Ontario, company, Dart-Assist creates digital voice files when plugged into the serial port of a PC, laptop or notebook.

The product digitally records dictation and compresses and stores voice messages and data on stand-alone or networked PCs.

Dart-Assist costs $399.
▶ *The BCB Technology Group*
(905) 850-8266

Ascent Solutions, Inc. has introduced Pkzip Mac, a data compression utility for the Macintosh.

According to the Dayton, Ohio, company, Pkzip Mac uses a deflation algorithm to compress most data by 50% to 90%, letting users transfer files quickly.

The product includes user-selectable high-speed or high-compression operations. Macintosh-specific information is compressed separately from general information.

Pkzip Mac can store up to 16,383 files in one archive. It costs $55.
▶ *Ascent Solutions*
(513) 885-2031

Tatung Co. of America has announced Audio 15, a 15-in. flat-square screen multimedia monitor with built-in speakers.

According to the Long Beach, Calif., company, Audio 15 features two built-in speakers, a digital control panel and Energy Start compliance.

The monitor has a .28mm dot pitch, 1,024- by 768-pixel noninterlace resolution and a 75-MHz vertical refresh rate.

Audio 15 costs $499.
▶ *Tatung*
(213) 979-7055

NoRad Corp. has introduced JitterBox, an electromagnetic shielding product.

According to the Carson, Calif., company, JitterBox eliminates image jitter and distortion on computer monitors and video displays caused by background magnetic field interference with the monitor's internal fields.

JitterBox attracts and absorbs external magnetic fields so the monitor image remains stable.

Prices range from $395 to $595.
▶ *NoRad*
(310) 605-0808

Ultralink, Inc. has announced Ultralink Model 120, a slotless ISA bus expander.

According to the Minden, Nev., firm, Ultralink Model 120 consists of a single PC card and cable that connect a passive ISA backplane to a PC's parallel printer port, allowing the use of data acquisition, control and peripheral I/O cards without internal expansion slots.

Ultralink Model 120 expands address space and interrupt levels available on the expansion backplane. Both 8- and 16-bit ISA I/O data transfers are supported.

The Ultralink Model 120 costs $159.
▶ *Ultralink*
(702) 782-9758

FastTrax International has announced FastTrax 5.0, disk optimizing software.

According to the Berkeley, Calif., company, FastTrax 5.0 defragments any size hard disk with no limits on the number of files and directories, and it works 20% faster than the previous release.

The product tests and repairs disk surfaces, sorts directories using multiple sort keys and creates free space for Windows swap files and compressed drives. A Map Inspection features reveals which files are fragmented and which clusters are causing fragmentation.

A Make Trax utility lets users view and change file placement and priorities.

FastTrax 5.0 costs $70.
▶ *FastTrax*
(510) 525-3510

Creative Labs, Inc. has announced the Video Blaster RT300, a video capture card.

According to the Milpitas, Calif., company, the RT300 features real-time capture and compression of analog video for use in CD-ROM publications, presentations, training materials and desktop video.

The RT300, based on Intel Corp.'s 82750E video processor and Indeo technology, digitizes and compresses video data at 30 frame/sec. Other features include capture of full-screen still images and support for multiple video sources and standards.

The Video Blaster RT300 costs $499 and comes bundled with Adobe, Inc.'s Adobe Premier, digital video-editing software.
▶ *Creative Labs*
(408) 428-6600

Dolch Computer Systems has announced TelePac, a portable video teleconferencing platform.

According to the Milpitas, Calif., company, TelePac was designed for systems integrators and high-end business users and includes an adjustable video camera, a high-fidelity sound system and expansion capacity for integrating modems.

TelePac is ruggedized and includes shock mounting of the display and all plug-in boards.

Prices start at $4,500.
▶ *Dolch Computer Systems*
(408) 957-6575

The WizardWorks Group has announced the Notebook Companion, a collection of software applications designed for the notebook computer.

According to the Minneapolis company, Notebook Companion includes an Information Security System, Battery WatchPro for DOS/Windows, Schedule Works for Windows, Expense Wiz for Windows and Notebook Game Pack for Windows.

The applications feature access control, virus protection, memory checking, battery level checks, calendar scheduling and printing and expense reporting.

The Notebook Companion costs $59.
▶ *The WizardWorks Group*
(612) 559-5140

Product shorts

CalCom Products has introduced the 2842EX, a V.Fast 28.8K bit/sec. external data/fax modem. The product includes a high-speed serial card with two ports, interrupt request settings and support for communications port Levels 1 through 8. Cost: $249. CalCom Products, Placentia, Calif. (714) 961-1888.... **Number Nine Computer Corp.** has introduced Flash-Point, a family of graphics accelerators. The products come in 32- and 64-bit configurations and are powered by Cirrus Logic's GD5434 bit processor with an integrated true color palette. Cost: $179 to $249. Number Nine Computer, Lexington, Mass. (617) 674-0009.... **Dataproducts Corp.** has announced Typhoon 60, a 60 page/min. laser printer. Typhoon 60 was designed for high-volume, uninterrupted printing. It comes with 42 PostScript fonts, 20 PCL5 fonts and an on-line library of font sets. The product can simultaneously emulate up to 64 virtual printers, each configurable for a specific individual or workgroup. Toner can be added during printing. Cost: $95,000. Dataproducts, Woodland Hills, Calif. (818) 887-8000.
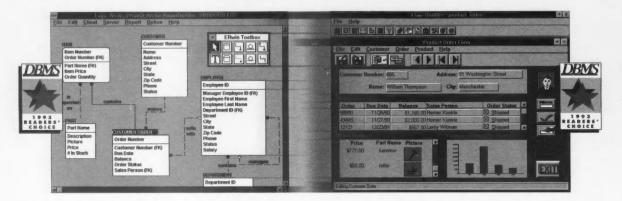
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Tricord aims low in superserver market

By Jaikumar Vijayan

■ **In a major step out of its traditional market, superserver vendor Tricord Systems, Inc. recently announced a new departmental server series aimed at the under-$15,000 market.**

Tricord's announcement, which puts it directly in the turf of vendors such as Compaq Computer Corp. and AST Research, Inc., includes three Pentium-based models: the DS1500 and DS1000, slated for delivery this month, and the DS500, scheduled for fourth-quarter delivery.

Mark Garver, Tricord's vice president of corporate strategy and marketing, said the server family positions Tricord favorably in the $8,000 to $15,000 segment of the superserver market.

"We see a growing need from users for high availability and fault-tolerant features in this price range," he said.

The systems, which are available in dual-processor configurations, include features such as error-correcting code memory, RAID

support, hot replaceable disk drives and server management software. Both the DS1500 and the DS1000 will also come with redundant power supplies.

"Anybody who intends to use these Tricord boxes as a Unix server will jump on it," said John Williams, MIS manager at Priority Pharmacy in San Diego. Williams said until symmetrical multiprocessing-enabled versions of Novell, Inc.'s NetWare are available, Tricord's new servers would be best suited for Unix environments that fully exploit their dual-processor capabilities. Williams uses a Tricord ES4000 enterprise server to run a pharmacy database.

Good response
Other users welcomed Tricord's entry into the small server arena.

"From a hardware standpoint, it's a good thing that a company like Tricord has decided to enter the departmental server market," said Shawn Gilbert, assistant manager of MIS at CardService International in Laguna Hills, Calif. "If we were a small company and

Tricord, *page 48*

Users seek net models

By Steve Moore

End users angry about ill-planned changes to mission-critical networks and corporate executives intent on cutting the cost of all network changes are driving network managers to invest in network modeling tools. Such software tools are available today, but choosing one is a complex matter.

By using software to construct and compare graphical models of what-if networking scenarios, users can make informed decisions about network changes and assess the impact of those changes before they implement them.

"I needed a tool to allow me to examine our capacity planning for our existing network, as well as to design and implement the expansion we're undergoing," said Don Bricker, a network administrator at Methodist Hospital in Fort Worth, Texas, and a beta user of IBM's recently announced Network Performance Modeler for OS/2, also called NetModeler.

The hospital is moving toward client/server applications and expanding its Novell, Inc. network from five to more than 20 file servers, Bricker said. The hospital's network also in-

cludes 55 OS/2 workstations, several RS/6000 computers and an increasing number of Sun Microsystems, Inc. workstations.

Historically, most users have "thrown networks together by the seat of their pants based on blind faith in vendors' promises" about the performance of their network hardware and software, said Harrell Van Norman, a senior communications engineer for the U.S. Department of Energy and author of the book *LAN/WAN Optimization Techniques.*

Although network modeling tools can make network planning more of a science than a black art, most of these tools require extensive technical expertise for proper use. They may not reduce a company's requirement for network engineers, Van Norman said, but modeling tools can help companies avoid overbuilding or underbuilding their networks — mistakes that are disruptive and expensive to rectify.

Some modeling tools are appropriate for static analysis of smaller departmental LANs. Others can run actual event-driven simulations of global voice and data networks, taking into

Net models, *page 48*

A sampler of network modeling tools

VENDOR/PRODUCT	PLATFORM
CACI Products Co. Comnet III	SunOS, Solaris, HP/UX, AIX, OSF/1, Irix, OS/2, Windows
Make Systems, Inc. NetMaker XA	SunOS, Solaris, AIX
IBM NetModeler	OS/2

Agents step to fore

By Lynda Radosevich

While advances in software agent technology may not solve the entire information overload problem, software agents can help improve the quality of information sent to users.

There are two central kinds of filtering agents and many different degrees of sophistication, analysts said. Simple personal agents that sort and forward electronic mail based on the sender or on keywords already exist in E-mail packages such as Lotus Development Corp.'s CC:Mail and Banyan Systems, Inc.'s BeyondMail.

At GroupWare '94 earlier this month in San Jose, Calif., vendors demonstrated more sophisticated agents that can scan data sources such as on-line services and corporate databanks for context and meaning, not just keywords. Also, the agents can initiate a workflow process based on certain triggers, such as an E-mail message or an addition to a database.

Conference attendees said they

were most interested in this kind of agent technology in order to get information on their competitors.

Verity, Inc. in Mountain View, Calif., best known for its document-search engine, has a kit that lets developers build context-sensitive agents into workflow applications. To that end, Saros Corp., PC Docs, Inc. and Action Technologies, Inc. announced recently that they will use Verity's agent technology in their document management and workflow products, which will be available in early 1995.

Verity also said it will ship early next year add-on software for Notes and the World Wide Web that will allow users to search and retrieve information based on contextual rules they set up.

SandPoint Co. in Cambridge, Mass. said it added "American Banker" to the list of periodicals that its information agents can scan in order to download the information to Notes.

Reporter's Notebook

The following are some items of interest from the GroupWare '94 show held recently in San Jose, Calif.:

At a vendor face-off, executives from **Lotus**, **Microsoft** and the WordPerfect division of **Novell** sparred over opposing object standards that ultimately will be a pain for end users who will have to worry about interoperability. Lotus Vice President Jeff Papows leaned on Microsoft's Tom Evslin, general manager of business

GroupWare '94

server applications, to get Microsoft to extend Object Linking and Embedding (OLE) integration technology to DOS, OS/2, Unix and other platforms.

The problem is that vendors such as Lotus will have to support two object linking standards, OLE and OpenDoc, the multiplatform scheme from Component Integration Laboratories. OLE and OpenDoc have different architectures, and interoperability will never be good, Papows said. To address this, Evslin indicated that Microsoft may port OLE to Unix.

Meanwhile, session moderator Amy Wohl, president of Wohl Associates, predicted that two more vendors will soon become powerful

in groupware: **Oracle** with its database-driven groupware and **Computer Associates** with groupware systems management.
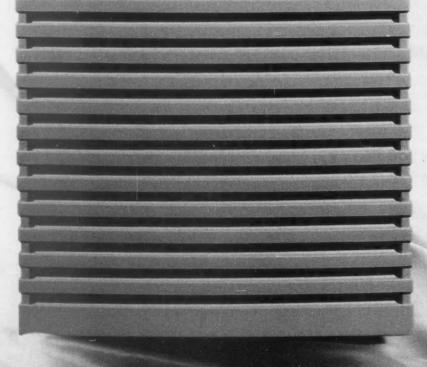
WordPerfect announced its first major reorganization since it was purchased by Novell. A new division called Novell GroupWare will be located at WordPerfect's Orem, Utah, headquarters. Ken Duncan, former CEO of SoftSolutions, was named vice president and general manager of the division. Bob Young, formerly a Novell NetWare executive, is vice president of marketing, and Stuart Nelson, former vice president at WordPerfect, is the vice president of research and development. The division's products include GroupWise (formerly WP Office), InForms and SoftSolution, with more to come through acquisitions, a spokesman hinted. Still unclear is where Novell's Message Handling Service division will land.

For users interested in migrating to a messaging server that is not yet shipping commercially, **Microsoft** has an answer. Company spokesmen demonstrated utilities that can move user names and mailboxes and scheduling information from IBM's Profs, Microsoft's Mail for AppleTalk, Lotus' CC:Mail and others to the forthcoming Microsoft Exchange server. The utilities are shipping to many large Exchange beta sites. Exchange still has no delivery date, but officials said it should ship commercially in the first half of 1995.

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Putting Technology

Net models

account queuing behavior and end-to-end response times. Van Norman advised users to be aware of the difference between basic analytical modeling that takes a snapshot of network utilization and actual simulation that dynamically models a network's behavior over time.

Users must determine whether they need a high-end dynamic simulation tool such as CACI Products Co.'s Comnet III, a high-end analytical modeling tool such as Make Systems, Inc.'s NetMaker XA or a more narrowly focused product such as IBM's NetModeler.

Bricker said he considered Comnet III, but "it was too expensive to justify since we don't have a lot of WAN links, and that seemed to be its strength." He added that his only criticism of NetModeler was that "the beta products have been lacking in the underlying base workstations to model." He noted that while IBM provided the tools to build those models, he would prefer to have them built into the product.

Warning is better

IBM's entry into the network design/modeling tool market is a sign of the growing importance of analyzing proposed new networks and changes to existing networks before implementation. NetModeler is intended primarily for

Tricord

we wanted major redundancy and fault tolerance," a server like the one Tricord announced would provide an adequate entry point he said, citing Plug and Play, flexibility of operating system support and level of redundancy as key factors for purchase decisions in this market.

Tricord's entry into the small server market coincides with an agreement with Fore Systems, Inc. in Pittsburgh in the area of Asynchronous Transfer Mode (ATM) communications technology. Under this agreement Tricord and Fore will integrate multiple ATM ports inside Tricord's enterprise servers.

Users said they liked the idea of integrated ATM functionality, but the technology was still far too nascent to really interest them.

"ATM is kind of out there right now.... There is not much out in terms of standards and hardware," said Gilbert, who indicated he will continue to use Fiber Distributed Data Interface and Ethernet switching technologies until ATM becomes widely available.

Fore Systems' ATM technology, which the firm claims is fully compliant with ATM Forum specifications, provides transparent software support for existing workstation and PC operating systems. ATM products from the company include the ForeRunner ATM switch family, LAN access cards and adapter cards.

SNA or combined SNA-TCP/IP networks, said John Morency, principal consultant at Strategic Networks Consulting, Inc. in Rockland, Mass. For example, NetModeler would be useful to "users who want to analyze how to best combine an SNA environment with a TCP/IP networking environment," he said.

"One of the nice things we're doing is that we set up a CompuServe forum [on NetModeler] so we can share models with other users," Bricker noted. "If I build a Sun workstation model and someone else does an RS/6000 model, we can share them and save quite a bit of labor."

In the future, Van Norman said, network modeling tools will likely be tightly integrated with enterprise network management systems such as Hewlett-Packard Co.'s OpenView and IBM's NetView, as well as with remote network monitoring probes.

And because some modeling tools use device libraries that closely mimic the behavior of specific vendors' products, they could be used "to compare and contrast vendor A to vendor B," he said.

"We've never used a modeling tool for laying out our network, but it's probably a good idea for us to do something like that," said Matt Fahrner, a senior network analyst at Burlington Coat Factory Warehouse Corp. in Lebanon, N.H. "You think you've got it all covered, but then you're always surprised by what the end user will throw at you."

REALITY BYTES™

Lannet builds LAN bridge, unveils FDDI products

By Stephen P. Klett Jr.

Lannet Data Communications Ltd. recently spun off a start-up company that will develop wireless data communications products for local-area and enterprise networks.

In conjunction with its unveiling, Lannair Ltd., which is based in Tel Aviv, Israel, launched its first product — a remote wireless Ethernet LAN bridge. The bridge was designed to connect remote LANs in campuses and metropolitan centers where installing physical cable may be impossible, difficult or costly.

According to Lannair, EthAirBridge is the first product to extend wireless bridging between Ethernet networks to a range of 15 miles. The bridge has a full-duplex data throughput rate of 76.8K bit/sec., which is comparable to traditional 64K bit/sec. leased-line connections such as fractional T1. However, an optional 4-to-1 data compression board can boost throughput to more than 300K bit/sec.

"From a technical perspective, this appears to be real good product. The question is the potential market for it," said Chip Petterossi, an analyst at International Data Corp. in Framingham, Mass. "The general-purpose commercial market has not yet evolved."

EthAirBridge uses 2.4-GHz frequency-hopping, spread-spectrum radio technology, which was originally developed for military applications. Spread spectrum disperses data packets over a range of frequencies, making it impossible for listeners at any single frequency to access the data, Lannair said.

> Lannair is developing a line of wireless hubs and PCMCIA adapter cards that are slated to ship in the first half of next year.

"This product sounds secure enough that it could hold a lot of promise for connecting some of our outlying branches as well as some isolated LANs in our main buildings," said a network manager at a large Midwest bank who asked not to be named.

EthAirBridge is available now for $6,995. The optional compression board costs $1,000. Lannet, Inc., a subsidiary of Lannet Ltd. in Irvine, Calif., will sell and distribute the product in the U.S.

FDDI lineup

In a separate announcement, Lannet, Inc. unveiled the following three Fiber Distributed Data Interface (FDDI) modules for its MultiNet line of intelligent hubs:

- **Integrated Ethernet to FDDI Router module:** Provides concurrent routing and bridging between all four Ethernet buses on the backplane of the MultiNet hub and an external 100M bit/sec. FDDI ring. The $17,995 module has a total of four Ethernet and two FDDI interfaces and is Simple Network Management Protocol (SNMP) manageable.
- **FDDI-over-copper concentrator:** The $2,495 LFD-104/RJ module provides a 100M bit/sec. connection to servers or workstations.
- **SNMP agent:** The $4,995 NMA-FD Network Management module configures, controls and provides real-time performance statistics on primary and secondary FDDI rings as well as Ethernet, Token Ring and LocalTalk networks.

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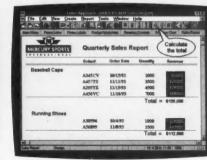
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to existing data)*

*Lotus 1-2-3 Integration
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Uniface-the video.

Info on our seminars.

Fax-Back brochure.

UNIFACE SIX

Auspex Systems, Inc. has announced the NS 7000 NetServer family of Unix Network File System servers.

According to the Santa Clara, Calif., company, the servers can host up to 300 users running software development, inventory management, document management, financial analysis and multimedia applications.

The servers' Functional Multiprocessing architecture eliminates I/O bottlenecks and dedicates processors for network, file and storage processing.

Prices start at $65,000.
▶ *Auspex Systems*
(408) 986-2000

STS Systems, Inc. has announced SmartLook, Windows-based software that provides access to legacy data.

According to the Pointe-Claire, Quebec, company, SmartLook lets users view and manipulate reports from mainframe and other legacy systems on their PCs, using a graphical user interface.

Features include customized templates for each report, automatic indexing of data each time a report is downloaded from the mainframe and three options for viewing reports. Reports can be reviewed by page, section or custom spreadsheet.

SmartLook costs $995.
▶ *STS Systems*
(514) 426-0822

Personics Corp. has announced Monarch for Windows, a report viewer and data access system.

According to the Wilmington, Mass., company, Monarch for Windows lets users view, query, print, analyze and extract reports from any mainframe, midrange system or PC.

Files can be accessed across a network via terminal emulation software or transferred on diskette.

Monarch for Windows costs $499 for a single user. Prices start at $2,000 for a network license of eight users.
▶ *Personics*
(508) 658-0040

Thoroughbred Software International, Inc. has announced Gateway to Windows 3.16.

According to the Somerset, N.J., firm, Gateway to Windows 3.16 provides transparent communication between Unix-based Business Basic/4GL applications and Windows. Users can display spreadsheets intermixed with Unix information, retrieve and display workstation-based graphics and access all host-based Business Basic or fourth-generation language files.

Prices range from $700 to $14,000.
▶ *Thoroughbred Software*
(908) 560-1377

Cleo Communications has announced Linkix APPC/CPI-C, a Unix-to-SNA connectivity product.

According to the Ann Arbor, Mich., company, Linkix APPC/CPI-C includes full implementation of IBM's Advanced Program-to-Program Communications (APPC) and Common Programming Interface for Communications (CPI-C), each of which supports Advanced Peer-to-Peer Networking.

The product lets transaction programs running on one system communicate directly with transaction programs on the same or a different system, without going through the host.

Prices start at $1,995.
▶ *Cleo Communications*
(313) 662-2002

These days, all it takes is a little success to overload your business. The more you demand of your computers, the slower things can get. Well, that's because PCs are made to be PCs. And at this point, what you really need is a server—the most efficient way to get your PCs working together.

So we'd like to introduce you to the Compaq ProSignia VS. Now, for the price of a desktop, you can get a real, industrial-strength server made by the company who knows the technology best. (Compaq is recognized as the world leader in servers.*)

Unlike a PC, the ProSignia VS is specifically designed for the job of powering a computer network in small- to medium-sized businesses. It's optimized for high-speed file transfers, to eliminate the finger-tapping during everyday tasks, like calling up a customer record to take an order. It also expands easily to

NOW THAT YOUR BUSINESS IS GETTING
A LITTLE BIGGER, GUESS YOU'LL
BE NEEDING AN OFFICE MANAGER.

provide vast, centralized storage as your business grows larger.

And while most servers are complicated, the ProSignia VS can make your life easier. Our optional CD-based SmartStart simplifies the whole process of setting up a reliable system. And Insight Manager (also an option) keeps an eye on key parts, pinpointing problems *before* they can disrupt operations.

Of course, the ProSignia VS also provides the security of

Compaq's three-year on-site warranty** and 24-hour support line.

To find out how you can give your company more agility as it grows, visit an authorized Compaq reseller. If you'd like more information, or if you'd like the name of your nearest reseller, call us at 1-800-638-8258, ext. 450. We can show you the best kind of office manager: One that works as hard as you do. **COMPAQ**

Every internetworking decision means going out on a limb. The trick is making sure it's attached to the right tree.

We understand the position you're in. You need to build an internetwork that links an entire organization today while accommodating rapid growth and new technologies down the road. At Wellfleet, our family of internetworking products and multiservice WAN switches are the key to building your highly available, high-performance backbone network and to connecting your remote offices. And our worldwide support is at your side 24 x 7 x 365. A comforting thought when you're out on a limb. Call us at 1-800-989-1214, extension 38.

WELLFLEET

Enterprise Networking

Support seldom follows as U.S. products go east

By Steve Moore

From the perspective of Sudhir Rahman, a senior network engineer at DHL International in Singapore, U.S. computer vendors need to get the American stars out of their eyes and align themselves with local constellations.

Rahman said U.S. vendors provide spotty technical support in the Pacific Rim and Asia and tend to be "very focused on ideal environments with high-speed [wide-area network] links."

Level of technology
In a region where only the five or six largest countries have sophisticated telecommunications infrastructures, a company such as DHL must write many of its own network applications and cannot "throw routers at the problem," Rahman noted. What U.S. vendors forget, he added, is that many Pacific Rim users still rely on 9.6K bit/sec. circuits and X.25 networks.

Rahman said specific routers, for example, may not be approved for use by regulatory authorities in some countries. Even if approved, they are often not suited for use in areas where circuits are unreliable, and X.25 remains the dominant protocol.

Jeff Kaplan, a director at Dataquest, Inc.'s Worldwide Services Group in Framingham, Mass., counseled users to carefully evaluate the "mosaic of strategic service alliances" that even the largest vendors are assembling because "they don't have the wherewithal to deliver uniform support in every region of the world."

Only the big guys
Rahman said Hewlett-Packard Co. provides limited local support in many of the 28 Pacific Rim countries that DHL's network spans but none in Bangladesh, for example. So he restricts use of HP's OpenView to the six largest countries. Even then, he added, he often must **Support,** *page 62*

Travel plans

Regardless of the geographical areas in which a company operates, a successful international network management strategy will incorporate the following policies, said Katherine Epes Barrett, a consultant to the International Finance Corp., a member of the Washington-based World Bank Group:

● Buy only brand-name equipment, and buy it from vendors that have their own overseas offices or authorized dealers' offices in the locations your network serves. "Not buying clones limits you to the big guys, and you're paying a premium," Barrett said. "But it more than pays for itself."

● Train the users at your remote sites. "One of the reasons we have such good luck in Argentina is that we have a person on the remote staff who is technically aware enough to have us walk them through things on the phone," Barrett said.

● Make sure you are fully understood. "I have cut virtually all slang out of my conversations," Barrett noted. "I speak very formal English with people in other countries — even the British." Do not depend solely on the telephone, she advised. "You need to write things down so people can go over them at their own pace and catch the nuances."

● And if you ship a unit to someone, "ship not just the vendor's manual but also your own special documentation" that explains how you have customized it and tells local technicians what to do step by step, she said. — *Steve Moore*

Update delays cost Banyan
Overall success continues, but some users let go of Vines

By Elisabeth Horwitt

■ **Banyan Systems, Inc.'s recent introduction of long-awaited network service and administration features is happening just a bit too late to discourage one customer from jumping off the Vines platform to Novell, Inc.'s NetWare 4.02. Another corporate user is threatening to leave for Microsoft Corp.'s Windows NT.**

Overall, Banyan has been increasingly successful in winning large corporate accounts to its Enterprise Network Service strategy [CW, Aug. 1]. The Westboro, Mass., company made 49% of all network operating system shipments to sites of 50 users or more last year, according to Dataquest, Inc.

On the downside, a number of Banyan users have been frustrated with delays in the shipment of promised key features, notably a Windows-based graphical user interface (GUI) for Vines administration tools.

Banyan just announced its Windows-based GUI for Vines administration and plans to provide another key feature, fail-safe log-in, in the next Vines release, due early next year, said company spokesman Bill Johnson.

Making the move
For W. J. Schafer Co., however, it is already too late. The firm is now in the process of converting its five servers from Vines to NetWare 4.01, with a 4.02 upgrade to follow shortly, said Bernard Del Llano, a network specialist at the Chelmsford, Mass., research and development company.

W. J. Schafer decided on the move last year based on some product gaps and some in-house comparisons of the products. Del Llano's group drew the following conclusions:

● Banyan's Intelligent Messaging Service did not perform as well as Novell's Message Handling System in supporting Microsoft's Mail, which is W. J. Schafer's messaging front end. "We did benchmarks for NetWare 4.x vs. Vines in terms of accessing AT&T's Easylink service and an MS Mail server," Del Llano said. "Executing an icon took three or four seconds longer for Vines than for NetWare on comparable servers."

● Vines did not have Macintosh support at the time.

● Novell seemed a more viable network operating system supplier, based on market share, and had broader third-party support.

● Installing a Vines server took about two hours and 45 minutes, compared with 35 minutes for

a NetWare 4.x server. It also took about half as long to boot up a NetWare server with at least 500G bytes of disk space as it did a similar Vines server.

● Novell's Windows-based NWAdmin seemed superior to Banyan's administration tools.

● Banyan did not provide direct call-in support. Until recently, "you always had to go through a reseller," Del Llano said.

Up for grabs
A Banyan product manager is scheduled to meet with DowBrands network analyst David Day later this month in an effort to persuade him not to move from Vines to NT. A former NetWare LAN administrator, Day said he was originally impressed with Banyan when he took over DowBrands' Vines installation.

In particular, Day said he liked Banyan's tools for developing small Windows applications to perform basic administrative work such as adding user accounts and moving users around the network.

More than a year later, however, Day said he is more aware of the drawbacks and gaps in Vines. He said he has been waiting impatiently both for a Windows-based LAN administration tool set and a fail-safe log-in feature.

Day was most vocal about Banyan's new tiered-pricing structure, introduced in the spring. DowBrands is likely to pay $25,000 per year for four 250-user server licenses; formerly it paid $10,000 per year for unlimited site licenses, he said. The problem is that Banyan has nothing to offer in between 100-user and 250-user licenses, and DowBrands has 600 users on four servers. Moreover, the company cannot guarantee that any one server will never have more than 100 users, Day said.

Viable solution?
Johnson said DowBrands can get around this problem by purchasing two 250-user licenses and two 50-user licenses. The licenses restrict only the number of users who can log on to a given server; once a user is logged on, access to any service on any of the servers is unrestricted, he said.

Day said this scenario will not work because he has configured each server as a separate domain that provides the majority of file and application resources for a particular set of users. This minimizes network traffic and makes it much easier to update user accounts to reflect moves and changes in network resources, he said.

Banyan now hopes to move to a true enterprisewide licensing structure by next year, Johnson said, but Day said that time frame sounded unrealistic.

> ### Coming out on top
> Banyan's Vines tied or beat Novell's NetWare and Microsoft's NT Advanced Server in the areas of ease of configuration management, ease of security management and ease of installation in a recent Buyers' Scorecard survey. Vines led both in all three areas with the exception of ease of installation, where NT Advanced Server matched Vines 5.5's score of 7.5 (on a scale of 1 to 10). The survey was conducted prior to Banyan's announcement this month of a Windows-based administration system for Vines.

Digital Communications Associates, Inc. has announced the Remote LAN Node (RLN) Application Server software for Novell, Inc. networks.

According to the Alpharetta, Ga., company, the RLN Application Server simultaneously manages up to 16 remote nodes per server when attached to a network by emulating a network interface card at the remote PC.

The product, when combined with the company's Remote LAN Node, lets users access LAN-based, file-intensive applications. The RLN Application Server uses Citrix Systems, Inc.'s WinView for Networks technology to provide remote access to applications that require high bandwidth.

The RLN Application Server costs $2,950 for a 10-user base system.

▶ *Digital Communications Associates*
(404) 442-4000

Saber Software Corp. has announced Saber Server Manager, a network performance management product.

According to the Dallas company, Saber Server Manager was designed to work with NetWare 3.1x and provides tracking, configuring and performance optimization for enterprisewide file servers.

A network manager can track and tune more than 60 internal NetWare parameters and offers the option to review and adjust real-time data or analyze historical server information.

The product lets users configure the server to match the needs of a specific application.

Saber Server Manager costs $695 per server.

▶ *Saber Software*
(214) 361-8086

TyLink Corp. has announced TyView/SNMP, Simple Network Management Protocol (SNMP)-based software for controlling high-speed digital access devices.

According to the Norton, Mass., company, TyView/SNMP provides centralized management of large, geographically dispersed digital networks that use public or private fractional T1, T1 or E1 services. It also automates troubleshooting and problem repairs.

TyView/SNMP reduces network congestion by eliminating SNMP polling from the local- and wide-area internetwork.

Features include real-time reporting, user-friendly diagnostics and a bit-error rate test.

Prices range from $1,995 to $17,485, depending on network size.

▶ *TyLink*
(508) 285-0033

Radcom Equipment, Inc. has announced the RC-200-C, an Asynchronous Transfer Mode (ATM) protocol analyzer.

According to the Mahwah, N.J., firm, the RC-200-C lets users test various opti-

cal and coaxial interfaces with a single unit by switching interface cards.

The system is made up of a RISC-based external unit with dual ATM segmentation and reassembly processors. The unit connects to any notebook or PC and is controlled by Windows-based application software.

The product can be used to simultaneously generate and monitor traffic, including physical and data link errors. Other tasks include ATM adaption layers 3, 4 and 5 transmission and reception, statistics, decoding and analysis.

Prices start at $15,000.

▶ *Radcom Equipment*
(201) 529-1100

Advanced Software Concepts has announced NetArchive-Distributed Network Backup, an enterprisewide backup and recovery system.

According to the Escondido, Calif., company, NetArchive-Distributed Network Backup backs up critical data from any or all computers in the network and stores the data in one central storage device or several devices distributed throughout the network.

Backup files are managed by the company's NetArchive-Storage Vault Manager software.

Prices start at $2,000.

▶ *Advanced Software Concepts*
(619) 737-9544

Company targets DECnet migration dilemma

By Mary Brandel

Hoping to ease the pain of TCP/IP migration for DECnet users, TGV, Inc., a $20 million leader in the TCP/IP market, will announce Phase/IP this week. The product allows customers to retain their familiar Digital Equipment Corp. DECnet applications and commands while transporting data natively over TCP/IP.

"That would be very powerful," said Jim Brown, research associate at the University of Miami, when he heard about the product. The university still uses DECnet, but TCP/IP allows VAXs to access non-Digital systems.

"I have a number of VMS systems that I can only access through TCP/IP, but all I can do is send files. I don't have the level of integration that I desire," Brown said. "This would give that to me."

Most Digital customers are seeking to replace DECnet with TCP/IP over time, said Jim Harrison, vice president of global networking strategies at Meta Group, Inc. in Reston, Va. "The majority see DECnet as a dying protocol," he said.

But most of the migrators will run both protocols side by side, only gradually weaning off DECnet. There is a "significant advantage" to allowing different command sets to exist during that coexistence phase, Harrison said.

Mary Ellen Fortier, marketing manager at Digital, denied that customers were mass-migrating away from DECnet. She claimed that more than half the DECnet installed base has already moved or is moving to DECnet/OSI, the latest version.

TCP/IP is big at Schlumberger Industries, Inc. in Sugar Land, Texas, which uses the protocol stack as the basis for an extensive international private corporate data network. But pockets of DECnet remain from the 1980s when Schlumberger was one of Digital's largest customers. It will be two to three years before it disappears.

Phase/IP will "allow people who know and love the DECnet interface the option of retaining those," said David Sims, director of Sinet, the information network at Schlumberger. In addition, custom applications written for DECnet will not have to be changed.

In the latest version of DECnet, introduced last December, Digital chose to support the Open Systems Interconnect (OSI) stack, but "our stated direction when we announced DECnet/OSI was to provide a variety of transports," Fortier said.

In fact, Digital plans to ship software next spring that will enable users to access DECnet applications over TCP/IP. Currently, DECnet/OSI customers must use application gateways to share information across transports.
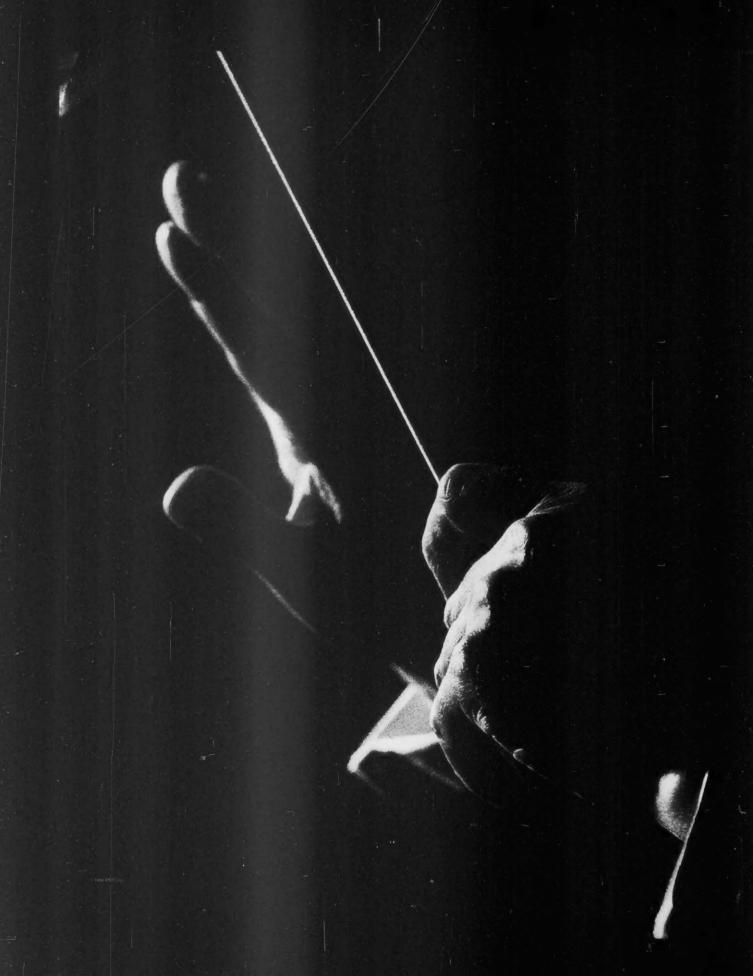
There is a catch to Phase/IP — it runs only on top of TGV's Multinet TCP/IP software, not with other vendors' TCP/IP software. Digital said its upcoming software is intended to run with multiple vendors' TCP/IP software.

Phase/IP costs from $300 to $7,000. Multinet costs from $12,000 to $24,000.

Common ground
More and more midrange systems users will look to TCP/IP as a common protocol across heterogeneous environments

PERCENT OF MIDRANGE SYSTEMS MIGRATING TO TCP/IP	
1994	35%
1995*	40.1%
1996*	46.3%

*Projected

Source: International Data Corp., Framingham, Mass.

Hospital goes paperless

Central database will ease access, reduce overlap

By Suruchi Mohan

The Methodist Hospital in Indianapolis is setting up a Patient Electronic Medical Record system that will store all patient records in a central database — doing away with the paper that has been needed until now.

The project, to be rolled out in three phases starting in October, will eventually give departments access to all patient information instead of requiring each department to collect its own. This will eliminate a major duplication of effort.

Additionally, the project will allow remote sites to access the patient data, according to Bill French, director of medical information management at Methodist Hospital.

Although not willing to disclose cost specifics, French said he expects the project to require the hospital to physically pull 25% fewer charts than it has in previous years. "I expect it to increase as time goes on," he added.

All in one

The system will require all departments at the hospital to send patient information to a Sybase, Inc. database running on a Sun Microsystems, Inc. server, explained M. N. Sabesan, director of systems integration at the hospital. The server will initially support 50 workstations.

With a Windows front end on a 66-MHz 486-based workstation, doctors will be able to view any information they need on a particular patient instead of having to log in to different servers in various departments.

An important component of the system will be the admissions data, currently collected on a mainframe. Eventually, the mainframe will be tied into the Sun server so the admissions information will be integrated with the rest of the patient data. The mainframe, which otherwise functions independently of the Sybase database, uses the admissions data to put together a patient's financial information.

In the meantime, the mainframe will send patient registration data to the relevant departments, where it will be printed out. Most departments will still have to manually input the information into the departmental system, though some will receive electronic updates.

System insecurity

Although the central repository will require the user's name and password, there will clearly be a need for more security features, according to Sabesan, who will start working on restricting ac-

cess once the system is rolled out. Before he tries to tighten security, however, Sabesan will need feedback from physicians on what constitutes a critical data element.

Sabesan said it is hard for him to predict the problems he will face once the system is up and running. The speed and robustness of the network, training physicians and finding support people are among the issues he anticipates dealing with, he said. "When we roll out 1,000 workstations and [include] remote sites, support will be a crucial issue," Sabesan said.

Even though remote sites will not be able to dial into the database in the initial rollout, the hospital has connected 11

Methodist Hospital's M. N. Sabesan (left) and Tim Spears are trying to replace paper records with electronic records

suburban clinics to its main network, according to Steve Neal, director of telecommunications at the hospital. At the center of this network is a collapsed backbone composed of three Wellfleet Communications, Inc. routers with spokes reaching into the different departments and T1 lines linking the remote sites.

Network smorgasbord

The nodes on the network are an eclectic mix of mainframes, IBM AS/400s, Unix boxes and PCs. Mixed TCP/IP and SNA network traffic is allowed to communicate using Apertus Technologies, Inc.'s DataStar hub.

The remote sites can move images to and from the hospital: With digital teleradiology, a patient's magnetic resonance images and CAT scans can be sent over a T1 line; with analog teleradiology, a patient's ultrasound can be sent over a fiber-optic line. This will allow a technician at a remote site to get a doctor's advice from a distance.

Various departments are reaping the fruits of the system as well. "We had been limited in providing lab services to remote sites because we didn't have connectivity and had to use modems," said Tim Spears, system manager of lab information systems in the pathology department. "So we [always] ended up using paper."

Proginet to ship file transfer

Proginet Corp. in Uniondale, N.Y., has acquired a Novell, Inc. PC-to-mainframe file transfer product based on the IBM SNA-based IND$File protocol. The company plans to release a series of enhancements to the file-transfer product. The first, scheduled for shipment Sept. 1, is called IND$File Plus 3.0 Advanced Feature Pack. It will include improved file-transfer performance through data compression, security, an audit trail, reduced CPU utilization and batch job submission from PCs.

Novell combines sales team

Novell, Inc. recently announced the formation of the Novell Applications Group subsidiary, a worldwide sales organization comprising the sales teams of Novell and the recently acquired WordPerfect Corp. The combined force will consist of more than 1,600 people worldwide, Novell said. Separately, the company announced it has added support for DR DOS 6.0 and its enhanced version of the operating system, Novell DOS 7, through its Novell Authorized Service Center channel.

Research goes on-line

J. P. Morgan & Co. has established an on-line forum to electronically deliver research publications to its clients. The forum is carried by CompuServe, and information is published using a portable document format from Adobe Systems, Inc. that lets customers read formatted information without requiring them to have the originating software.

Z-Code founder quits

Dan Heller, founder of electronic-mail company Z-Code Software Corp., resigned as executive vice president and board member of Network Computing Devices, Inc. (NCD). NCD bought Z-Code in February in a combination cash/stock transaction. NCD will buy out Heller's stock shares, valued at roughly $3.8 million.

Full-duplex card debuts

Xircom, Inc. began shipping its CreditCard Ethernet Adapter IIPS,

which it said is the first full-duplex Ethernet PCMCIA card. A 10Base-T version costs $215, and a combined 10Base-T/10Base-2 version costs $255.

Newspaper goes interactive

The Minneapolis-St. Paul Star Tribune is the latest major metropolitan newspaper to go on-line. The newspaper said it will create an interactive electronic news and information service with The Interchange Network Co., a Ziff-Davis Publishing company. Services will include news and photographs in addition to what is printed in the daily paper.

Gateways, routers port

CNT/Brixton Systems Inc., Cambridge, Mass., has ported its family of IBM SNA gateways and TCP/IP routers to Novell, Inc.'s UnixWare. The products provide SNA links between LAN workstations and IBM hosts, including SNA over TCP/IP connections. Internetworking software is said to transfer TCP/IP traffic over Point-to-Point, frame relay and X.25 networks.

ASX switches evolve

Fore Systems, Inc. in Pittsburgh announced shipment of the second generation of its ASX family of Asynchronous Transfer Mode (ATM) switches. The family includes a 24-port LAN and wide-area access switch as well as backbone switches that are scalable from two to 96 ports. The switches conform to the ATM Forum's User-to-Network Interface 3.0 standard. Prices start at $21,950.

SynOptics figures slide

SynOptics Communications, Inc. in Santa Clara, Calif., reported a profit of $16.1 million on revenue of $168.7 million for its second fiscal quarter, which ended July 1. These numbers are down by more than $11 million and $8 million respectively, compared with the same period last year.

Going public

Geoworks in Alameda, Calif., a maker of operating systems for consumer computing devices such as personal digital assistants, has announced an initial public offering of 1.5 million shares of common stock at a price of $6 per share.

Support

rely on DHL's own technical support group in Burlingame, Calif., for help with OpenView.

HP has invested more in its worldwide service operation than most vendors, Kaplan noted. "The challenge is enormous

and even they are falling short," he said.

Users with multinational networks must evaluate each vendor's ability to coordinate closely with its own branch offices and those of its local resellers or distributors around the world. In Europe, Kaplan said, "The reseller is king. Vendors play a secondary role because the resellers don't want the vendors' help, and the customers like to work with local companies."

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Large Systems

FINANCIAL MESSAGE
EXCHANGE USES UPGRADE TO
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Client/server integration still painful

Users, vendors face incompatibility challenges

By Rosemary Cafasso

Some client/server software providers suggest that application integration can be an easy process.

Easy, of course, is a relative term.

Client/server may frequently involve Unix servers, SQL databases and Windows front ends. Further, most of the major client/server applications currently support or plan to support emerging standards such as Microsoft Corp.'s Object Linking and Embedding.

None of this, however, guarantees that applications will fit together easily. It does mean integration is far more possible in the client/server world than it was in the old host-based proprietary software days. But it is still going to take a lot of work.

"We all hear from the vendors that integration isn't that big a deal," said Kevin Reilly, vice president of information systems at Richardson Electronics Ltd. in LaFox, Ill. "It is not that big a deal if your

closer LOOK **Client/server**

Research, Inc. in Cambridge, Mass. For example, if one application uses a nine-digit postal code and another uses a five-digit ZIP code in customer files, a programmer will have to figure out a way to reconcile the two, Cameron said.

The upshot for users is that they must choose from among three options: write their own code to link applications; select either integration modules or preintegrated software from vendors; or commission a third party to do the integration work. Each approach has its pluses and minuses (see box at right).

The potential aggravation from an integration project is worth it, according to users, because it will eventually produce synchronized applications. This, in turn, will eliminate redundancies such as rekeying data that both programs need. Another integration benefit can come from tying in other technologies such as workflow or imaging, which boost the basic functions of the application.

Help on the way

The good news, according to observers, is that most client/server software providers are increasingly focusing on integration issues and coming up with a variety of schemes to decrease the burden on users. In the last several months, a flurry of integration announcements have hit the client/server market, from partnership programs to integration tools and services. Other announcements are expected this fall (see box at right).

However, many of these options will still require either lots of hard work or lots of money. In some cases, users are acting as their own systems integrators.

Huntington Bancshares, Inc. in Columbus, Ohio, is finishing an integration project that links in-house and third-party software. The project includes voice-re-

Ups and downs of integration approaches

1. Go your own way.

UPSIDE — User runs the show, can select the products and level of integration needed. If project is well-managed, likely the cheapest route.

DOWNSIDE — In-house efforts can sometimes turn into runaway projects.

2. Select already-integrated products.

UPSIDE — Bulk of integration work completed.

DOWNSIDE — Choices are more limited and dictated by the partnerships vendors establish. Can get costly, if vendor sells integration modules with product-specific consulting.

3. Bring in a hired gun.

UPSIDE — Project handled by experts.

DOWNSIDE — Most expensive option, with large-scale integration projects running well into six figures.

sponse software, document imaging, multimedia tools, word processing, mainframe applications and a relational database management system.

Cary Serif, manager of applied technology, said integration can be a major headache because "it is a question of standards: There are none."

"Everyone has their own set of APIs," Serif continued. "Novell has a set. Filenet has a set. IBM has a set. There is really no well-defined means of tapping into any software."

Programmers had to write code that essentially spoke to an application's application programming interface (API), a process Serif said was "not pointing and clicking, not by a long shot."

No secrets

Most of the big name application vendors, including PeopleSoft, Inc., Oracle Corp. and Dun & Bradstreet Software, have published APIs so programmers can write code that links to their applications.

One company, Avalon Software, Inc., has gone so far as to publish its source code and the programming models it used to design its client/server manufacturing software. But users and analysts warn that publishing code does not ensure easy migration. It

Product plans

► PeopleSoft will announce at month's end the Systems Integration Partnership Program, which will essentially provide users with a roster of integrators from which to pick if a major client/server project is on the agenda.

► Great Plains Software next month will introduce tools to link its financial software to Lotus Development Corp.'s Notes groupware and Watermark Software, Inc.'s Imaging Manager imaging system.

only gives users the tools to write software that will tie into the client/server applications.

"The fact that they published APIs doesn't mean anything," said John Mann, an analyst at Yankee Group in Boston. "It represents their own view so that doesn't make them open and integrated."

SAP America, Inc., for example, orovides a Dynamic Link Library (DLL) of C code routines that can be used when writing software to connect to the company's R/3 suite of applications. A programmer would write code to a DLL, which would then handle the communications and data exchange routines needed to share data between R/3 and other software.

However, even SAP officials said this is not kid stuff. "We are working on a kit that will automate this more [and] make it easier," said Pat Day, a senior corporate consultant. "Today, we supply the hooks."

Simple solution

What users are finding is that there are different levels of integration, some of which are more manageable than others.

A common method today is to create a bridge between applications so they can share data. This falls short of true integration, where applications work together and changes made in one application are automatically reflected in related applications. But in many cases, data transfer more than does the trick.

Users can also turn to vendors to provide integration modules. This approach is not cheap, but it reduces the integration work load for users. The Vantive Corp., which sells customer support software, now offers a series of modules called Open Links that will hook its client/server applications to other software or tech-

U.S. client/server software market

Market revenue breakout

	VERTICAL APPLICATIONS	CROSS-INDUSTRY APPLICATIONS	SYSTEMS SOFTWARE	TOTAL MARKET
1993	$2.8B	$5.5B	$5.9B	$14.2B
1998 (projection)	$17.1B	$14.3B	$19.1B	$50.5B

Source: Input, Mountain View, Calif.

environment fits into client/server nicely: nothing but Unix servers and plain vanilla" software.

But for Reilly and many other users, client/server environments will include a mix of platforms and software — more like Rocky Road ice cream than plain vanilla. Yet even with common operating systems and databases, the client/server applications have been fine-tuned by software providers and, in some cases, built with proprietary tools.

Without consistencies in application architecture and programming design, one application will not know that another exists, much less easily communicate with it. As a result, integration projects can be tricky and time-consuming, and the smallest items can cause headaches, said Bobby Cameron, an analyst at Forrester

What's ahead

► Oracle said it will make available over the next 12 months a set of graphical user interface specifications so other third-party developers can tailor their front ends to look similar to the Oracle environment.
► SAP is working on a developer's kit that will reduce the amount of coding a user would have to do to tie into the R/3 platform. It is targeting early 1995 for shipment.

DECISION-MAKING IS THE RESULT

The ultimate goal of Dun & Bradstreet Software solutions is to help customers improve the most crucial process in any business: the process of decision-making. In the Information Age, all employees have become "knowledge workers" to one degree or another. Productivity gains flow from the value of their decisions, allocating people, time, money and other resources to meet enterprise goals.

To make decisions that positively impact your company's performance, profitability and value, people need decision support tools that increase the timeliness and usefulness of decision information. This is the function of D&B Software's SmartStream platform. Applications such as Financial Stream, HR Stream, Manufacturing Stream and Distribution Stream efficiently gather the data generated in everyday business processes from orders to shipments. SmartStream Decision Support then turns these data into decision information, delivering the knowledge people need for decisions that reduce costs, enhance competitiveness and improve the bottom line.

With better decision-making, customers can improve their business processes, fine-tuning activities for optimum information flows and faster time-to-decision. As a blueprint for process reengineering, SmartStream helps customers construct more efficient business processes to gain tangible returns on their information technology investments.

DELIVERING CONVENIENT DECISION INFORMATION

Every business generates a wealth of decision information every day. For example, each sales order tells a company something about its competitive position and marketing performance. The problem, of course, is that few managers have enough time to extract and format this information so it can tell them where their business is going and how they should guide it.
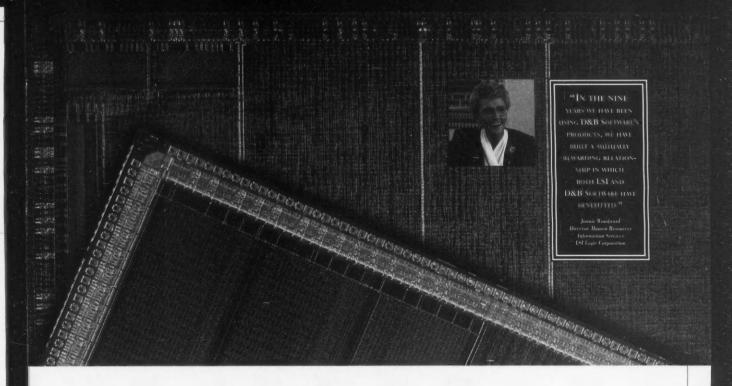
SmartStream Decision Support is a client/server application that lets customers integrate, analyze and distribute information from the entire company in an easy-to-use environment. For example, customers can use SmartStream Decision Support to distribute realtime financial statements electronically, allowing managers to view summary reports, supporting schedules and notes at whatever level of detail they desire. SmartStream Decision Support also serves as an interface between transaction and offline environments, allowing managers to easily extract current information for spreadsheet "what-if" analyses.

A PLATFORM FOR BUSINESS PROCESS IMPROVEMENT

In addition to letting managers access more financial, manufacturing and employee information for decision-making, SmartStream is a resource for a better understanding of the business processes that generate that information. Unlike a process reengineering consultant, however, SmartStream "teaches by example," allowing companies to examine the impact of major or minor workflow changes.

Rather than porting its mainframe products to client/server, D&B Software developed SmartStream from a different paradigm. Based on research and customer input, it created an enterprise model, a "virtual company" composed of over 1,000 business processes that showed the data needs, workflows, activities and hand-off points encountered by every organization. This enterprise model forms the basis of all the functions that go into the SmartStream product suite, providing its users with an integrated, proven process for managing business information.

For example, Financial Stream is based on the approximately 180 processes that are used by a corporate accounting organization, including everything from posting an invoice to preparing monthly

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Jeffrey M. Kaplan

Support requires a strategy

The advent of client/server computing has forced customers to rethink their information technology strategies. They are reconsidering their hardware platforms and software operating systems and readjusting their end-user applications and database management systems. But few customers are paying equal attention to one of the most significant cost elements in their information technology budgets: support services.

This oversight leads to needless expense and the inefficient use of in-house and external skills to get the "best bang for the buck" from information systems.

Dataquest research shows that customers spend at least one-third of their information technology budgets on support services, including in-house personnel and outside vendors who design, install, maintain and manage computer and communications equipment. Additional research suggests customers can pay three times as much for end-user support services as they pay for desktop hardware and software.

Despite this enormous investment in staff and services, many CIOs and CFOs admit they have not developed support strategies. Not surprisingly, these same senior executives say they are not satisfied with the quality of support and ease of use of their information systems.

This situation is likely to get worse before it gets better unless IS management changes its thinking. Client/server computing is driving even more computing power into functional departments, and mobile computing is giving a broad cross-section of end users remote access to corporate information systems. This dispersion of computing resources and end users is straining internal support.

Compounding this situation, economic constraints brought on by intensifying competitive pressures have driven many customers to downsize their in-house support groups and/or outsource this function entirely.

> Few customers are paying attention to one of the most significant cost elements in their information technology budgets: support services.

Downsizing or outsourcing an internal support organization is not inherently wrong. The mistake is to take this action for purely economic reasons. Support services is where the "rubber meets the road" when it comes to maximizing the return on the information technology investment. It is true that hardware and packaged software are commodities, and installing and maintaining both has also become a commodity.

However, major user organizations tailor information technology to meet their business requirements. This customization process suggests that an equally unique configuration of support services should also be in place. Too many customers have been disappointed by overlooking this point.

Therefore, customers should spend more time identifying service and support needs. These requirements should reflect the changing computing requirements of the organization and recognize its business objectives and budgetary constraints.

This self-appraisal should be the foundation of a support services strategy, a business plan as detailed as any other strategy statement. Preparing this document will compel a customer to prioritize how to deploy limited resources to meet computing goals. Should it focus its internal staff on routine installation and maintenance issues? Or should a customer leave these tasks to an outside vendor so the in-house staff can concentrate on applications development and new technology deployment?

Be proactive

These questions seem obvious, and many customers claim they make these decisions on a daily basis. But that is the problem: Most customers make tactical decisions in response to daily issues. They only examine these issues when senior management confronts them with an outsourcing arrangement.

By proactively initiating a support services strategy, information technology managers can evaluate the true costs and benefits of support services and devise a solid plan to deliver these services with the proper mix of in-house staff and external resources.

Many information technology managers are on the defensive trying to protect dwindling staffs from further encroachment by outsourcing arrangements. Adopting a proactive approach to building a solid services strategy helps them protect their organization's information technology investments and ensure comprehensive end-user support.

Kaplan is a director at Dataquest, Inc.'s Worldwide Services Group in Framingham, Mass.

Financial message exchange uses upgrade to cut customer charges

By Thomas Hoffman
CULPEPER, VA.

As the international banking community's primary messaging gateway, The Society for Worldwide Interbank Financial Telecommunication (SWIFT) is quietly upgrading its information systems architecture to improve the reliability of its network for existing and prospective customers.

As part of its $10 million Capacity Rationalization Project, SWIFT is upgrading a slew of Unisys Corp. A series mainframes in its data centers here and in Holland and Brussels. The project, which SWIFT expects to complete by year's end, is designed to bolster the organization's raw processing power while reducing its environmental costs. Most importantly, the new mainframes are expected to increase SWIFT's overall uptime.

Closer to perfection

For example, the SWIFT network, which processes roughly 2 million messages per day to assist currency and securities transfers, maintained an uptime rate of 99.9% in 1992. With even more fault-resilient hardware in place, SWIFT is looking to bolster its uptime to 99.98% this year, with further improvements expected in 1995 after the project has been completed.

While the differences in SWIFT uptime seem minimal, they can be very costly for larger banks that handle thousands of financial transactions each day, according to Aubie Curtis, manager of SWIFT's

SWIFT's Aubie Curtis *says a small difference in uptime can be crucial for banks handling thousands of transactions daily*

operating center here. By upgrading its 14 Unisys A6 regional processors with newer models, SWIFT expects to reduce its downtime from six to seven minutes to one to two minutes each time the computer goes down, Curtis said.

That is significant for an organization that processes thousands of international currency translation messages each day, according to David Medeiros, an analyst at The Tower Group, a Wellesley, Mass., financial services/technology consultancy.

Proven commodity

SWIFT, which has been using Unisys A series machines since 1990, considered other mainframe technologies and even some distributed platforms before deciding on an A series upgrade path last year. "We decided to stay with Unisys since it had the reliability and the scalability that we needed," Curtis said.

With the upgrades, SWIFT will swap out older Unisys A3 and A5 machines with faster A6 units at all three data centers. Because it is using fewer and more efficient processors, the A6 machines have helped SWIFT's Culpeper data center cut its monthly electrical costs from $60,000 to $35,000.

In other moves to attract new business, in June SWIFT slashed onetime participant fees for money managers by 74% from $37,000 to $9,000. Similarly, the cooperative reduced membership fees for commercial banks from the $45,000-to-$50,000 range to $15,000, retroactive to April.

Briefs

Scaling a high peak
Tandem Computers, Inc. claimed that record-breaking results were achieved by its Himalaya parallel server using the Transaction Processing Performance Council's TPC-C benchmark. Tandem said a 112-processor Himalaya K1000 parallel server achieved 20,918 transactions per minute at a cost of $1,532 per unit benchmark. The Himalaya server executed more than 11,000 physical disk I/Os per second, more than 87,000 logical disk I/Os per second and more than 22,000 SQL statements per second against a 1.3T-byte SQL database.

Software patents get help
The U.S. Patent and Trademark Office has hired nine computer scientists to help patent examiners do a better job reviewing software patents.

HP opens client/server center
Hewlett-Packard Co.'s service activities continued to snowball last week as the company cut the ribbon on its Open Systems Transition Center in Dallas. The center is intended to help users move from mainframe to client/server computing by providing access to open systems technologies, including databases and conversion tools. In other service moves this year, HP launched a 4,000-member systems integration group, created an outsourcing operation and formed a business process re-engineering unit.

Bank, EDS team on $350M pact
In a smaller version of its Xerox Corp. mega-outsourcing contract, **Electronic Data Systems Corp.** reached a tentative agreement on a global, $350 million, 10-year outsourcing contract with **American Express Bank.**

Client/server

nologies, such as fax systems.

One module that ties the Vantive software to an automatic call distribution system sells for $10,000. Eric Docter, a director of marketing at Vantive, said users also need at least a few days of consulting to help implement the link. That fee could run anywhere from $2,000 to $10,000, depending on the specifics of the project, he said.

Avalon Software also plans to roll out a series of integration modules, which a company official said would likely be priced in the "tens of thousands of dollars range."

Going outside

Another approach would be to sign up with a consulting firm or vendor to handle the integration. While users will get made-to-order integration, they will also pay for it. Industry estimates vary, but client/server projects can easily cost at least half of the client/server software fee.

Considering that client/server application licenses can cost $100,000 or more, these projects are bound to require big bucks.

Long term, some partnership programs, such as Oracle's Cooperative Applications Initiative announced in April, could have the biggest payoff for users. On paper, these deals say the partnering vendors will handle the integration. The trade-off is that a user must be committed to the vendor that has arranged one of these programs and be willing to pick applications from a select list of integration partners.

Micro Focus, Inc. has announced Fileshare for CICS/VSAM 1.0, a file server for mainframes and client systems.

According to the Palo Alto, Calif., company, Fileshare for CICS/VSAM 1.0 provides transparent access to mainframe VSAM files from applications running on workstations. Client systems can be running DOS, Windows or OS/2.

Services include multiuser access to shared files, record locking, update logging, roll forward recovery and transaction processing.

Fileshare for CICS/VSAM 1.0 runs on a mainframe under CICS control, receives requests from client applications, performs required VSAM processing and passes back any retrieved records and file status codes.

Fileshare for CICS/VSAM 1.0 costs $9,000 per logical CPU.

▶ *Micro Focus*
(415) 856-4161

CKS North America has announced NC-Pass NetWare and NC-Pass LAN Server, security management products that link IBM mainframes with LAN Server and Novell, Inc. NetWare systems.

According to the Pittsburgh company, NC-Pass NetWare and NC-Pass LAN Server provide enterprisewide, centralized authentication server functions including a single user ID log-on to multiple LANs and LAN/WAN dial-in security.

The products also provide central auditing and recording of all LAN access and use the enterprise system as the authentication server.

A handheld device can be used for password validation and end-user authentication.

Prices start at $37,000 for combined mainframe and LAN components.

▶ *CKS North America*
(412) 928-3300

XDB Systems, Inc. has announced the XDB-Link Application Server for DRDA, an IBM Distributed Relational Database Architecture (DRDA) protocol server for client/server platforms.

According to the Laurel, Md., company, the XDB-Link Application Server for DRDA lets a DB2 for MVS, DB2/VM or SQL/400 application initiate a dialog to access and manipulate data stored on an XDB-Server database running on a LAN, PC or mobile computer.

Once the connection is made, the location of the data becomes transparent to the application.

Prices start at $21,000 for one to 10 users.

▶ *XDB Systems*
(301) 317-6800

PowerCerv Corp. has introduced PowerMan, graphical client/server manufacturing planning software.

According to the Tampa, Fla., company, PowerMan is an integrated manufacturing enterprise resource planning system that supports interactive resource planning, workflow management, electronic data interchange, bar-code data collection and a paperless environment.

The product includes object-oriented programming, a relational database and a graphical user interface. It provides an open environment scalable across multiple hardware platforms and operating systems.

Prices start at $65,000.

▶ *PowerCerv*
(404) 931-3822

Real Solutions has announced SAF 1.1.2, a storage automation facility (SAF).

According to the Bay City, Mich., firm, SAF 1.1.2 provides real-time, storage automation facilities for MVS data management tools.

Management procedures can be initiated based on the conditions in the storage system rather than solely on time. The product also prioritizes data management functions according to the return on investment to maintain free space availability.

An early warning feature sends alarm messages directly to the storage administrator's terminal.

License fees are priced starting at $14,700.

▶ *Real Solutions*
(517) 894-5929

Product shorts

Banner Software, Inc. has announced Exitman 4.0, MVS environment management software. The product provides dynamic loading and reloading of all MVS exits. The Optimizer module adds selection criteria for direct migration from primary volumes to migration Level 2. Cost: Prices start at $10,500. Banner Software, Sacramento, Calif. (916) 364-0900. ... **Firesign Computer Co.** has announced Outbound 3.1, a file-transfer product with support for Novell, Inc.'s NetWare for SAA. The product performs unattended file transfers between mainframes and PCs without interfering with other activities or affecting desktop users. Cost: Prices start at $22,995 for the host component and $450 per server for the NetWare component. Firesign Computer, San Francisco, Calif. (415) 398-7228.

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Application Development

Rough seas ahead for object developers

Users need more products and tools to bring object-oriented applications into mainstream

By Kim S. Nash

Corporate information systems developers are about to step into a storm of object-oriented activity with plans to increase the number of object applications at their shops by 40% to 80% by 1996, according to a recent survey on object technology.

Further, although Microsoft Corp. operating systems are expected to steal the show for most object-development projects, Sun Microsystems, Inc.'s Solaris will remain a strong contender, respondents said in a poll conducted late last month by Market Perspectives, Inc. in Framingham, Mass. (see charts).

An objective decision

The expected lifespan of an application has a lot to do with what kind of object-oriented development tools are most appropriate, said Vince Jordan, vice president of technology at SHL Systemhouse's Object Technology Center in Boulder, Colo. Jordan's rule of thumb: If the program is to last two years or more, go with a solid tool set that includes links to relational databases and has the ability to scale up. For a quick program lasting 18 months or less, it is safe to use a product with fewer features, such as C++, he said.

Although object technology appears to have caught the eye of IS, users said they need several items before object development can become mainstream. These include the following:

• **Systems and project management tools that are specifically targeted at object development.** For example, object-class libraries are becoming more widely available, but vendors in that sector have not agreed on object naming conventions, said Jason Browning, distinguished member of the technical staff at AT&T Bell Laboratories in Homedel, N.J.
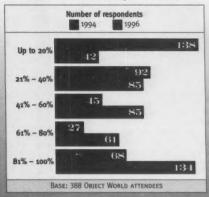
Sometimes, objects from different vendors' libraries are named identically, thereby confusing applications when they execute, Browning said.

Some firms, such as object database maker Ontos, Inc., provide tools to reconcile such conflicts, "but you still have to go through and verify everything, which takes time," he said.

• **Object-specific analysis and design products.** They do exist and have for several years,

WHAT PERCENT OF YOUR DATA PROCESSING BUDGET DO YOU EXPECT WILL BE SPENT ON OBJECT TECHNOLOGY?

PERCENT OF BUDGET	PERCENT OF RESPONDENTS	
	1994	1996
UP TO 20%	25.3%	10.2%
21% - 40%	26.7%	22.1%
41% - 60%	21.3%	21.1%
61% - 80%	12.3%	18.6%
81% - 100%	14.4%	28.1%

BASE: 322 OBJECT WORLD ATTENDEES

Source: Market Perspectives, Inc., Framingham, Mass.

WHAT PERCENT OF YOUR APPLICATION BASE COULD BE CONSIDERED OBJECT-ORIENTED?

Number of respondents
■ 1994   ■ 1996

	1994	1996
Up to 20%	42	138
21% - 40%	92	85
41% - 60%	45	85
61% - 80%	27	61
81% - 100%	68	134

BASE: 388 OBJECT WORLD ATTENDEES
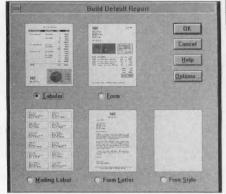
Source: Market Perspectives, Inc., Framingham, Mass.

but users want them included in the object-oriented programming tools they use today. "I'm not into buying a separate methodology product.... I want a full package," said the development manager at a large bank based in Illinois. "We've had cases where we've used object technology badly and haven't used the code again — which defeats the purpose of going to objects in the first place."

• **A reliable and standard way to map objects to relational databases and vice versa.** High-level tools — as opposed to down-and-dirty programming languages — are needed to let users and developers access objects by named class, according to Alex Cone, president of Object Technologies, Inc., a consulting and independent software firm in New York.

"An object manager of sorts that would hand objects to you in a single standard format is what we're after," Cone said.

Right now, such products and handling methods are not widely available, although Next Computer, Inc.'s Enterprise Objects Framework was designed to do the job. The framework "takes a lot of the grunt work out of dealing with objects," Cone added.

Intersolv boosts Q+E features, prices

By Melinda-Carol Ballou

■ Intersolv, Inc. beefed up Q+E Software's query and reporting tool and raised prices earlier this month, pleasing some users with the new features but annoying others with the higher costs.

Under an agreement with Q+E, Microsoft Corp. embedded Q+E's query tool into earlier shipments of Microsoft's Excel spreadsheet. Through this, Q+E usage spread to several million Excel users. But the agreement between Microsoft and Q+E ended when Intersolv acquired Q+E in April.

Now, Intersolv wants to leverage that customer base with a deal that will let users upgrade to Release 6.0 of Q+E tools for $99 until Oct. 31. Thereafter, the price will be $499; previously, it was $299.

While a number of users applauded the product's increased functionality, others said the new full price and licensing structures will make the costs prohibitive.

Losing customers

"We don't find things in there to justify the price," said Gary Tollefson, manager of computing services at Fisher Controls Co. in Marshalltown, Iowa. "We're going to drop Q+E [for Microsoft's Access] because of the price and new licensing structures, and you'll find me to be one of the biggest Q+E bigots around."

In addition to raising the package's price, Intersolv has also jettisoned Q+E's concurrent licensing policy, he said.

In some cases, Tollefson's organization was able to get a 20-to-1 user-to-copy ratio with the concurrent licenses, which were maintained via meters. But now his group will

An improved report writer may help the Q+E query tool continue to garner market share despite increased prices

not "even be able to upgrade the concurrent licenses that we own," he said, because of Intersolv's shift in licensing policy. In other words, Tollefson's company will have to pay for individual Q+E licenses, whereas users of Microsoft's Office suite will be able to use Access from the LAN without additional cost.

"The pricing issue has come up only since the Intersolv purchase and is not inconsistent with the way Intersolv treats its other products," Tollefson said. "I think it's par-

Q+E, *page 72*

WHAT DO YOU EXPECT WILL BE THE TOP APPLICATION DEVELOPMENT OPERATING SYSTEMS IN YOUR ORGANIZATION?

	PERCENT OF RESPONDENTS	
	1994	1996
CHICAGO	0%	24.7%
SOLARIS/SUNOS	23.9%	20.5%
WINDOWS	42.7%	21.8%
WINDOWS NT	9.5%	20.7%

Base: 873 Object World attendees (Multiple responses allowed. A sample of responses is listed.)

Source: Market Perspectives, Inc., Framingham, Mass.

Steve Moore

Objects of confusion

It's no longer safe to assume that an object is something as simple as a rock or a spoon. Nowadays, the term object also refers to one of the fuzziest logical concepts ever bandied about the information industry. Everyone understands objects of desire and objects of derision, but now we need to understand objects of object-oriented software technology.

Are objects chunks of reusable software code, or are they cute icons we love to click on? Or could they be complex "managed objects," such as the Management Information Bases associated with SNMP?

When you ask vendors, they usually say "all of the above," but that does nothing to dispel the cloud of confusion surrounding objects. Some vendors are simply seeking terminology that helps them grapple with new and complex product development techniques. But other vendors are deliberately clouding users' minds with marketing mumbo jumbo within which the term object has no more specific meaning than the terms "robust" or "solution" or (shudder) "robust solution."

Because we seem to be stuck with three principal types of objects, let's define them. With reusable software objects — also known as program objects — the idea is to assemble a group of software modules that can be linked togeth-

er on demand to form a variety of different applications. Then it's hoped that users will no longer risk buying several separate network management applications that don't talk to one another. Rather, they will save money and staff time by using program objects that can be automatically mixed and matched like Lego blocks to form customized network management applications that do talk to one another.

We can dispense with the second type of objects — graphical objects we click on in user interfaces — simply by agreeing to call them icons.
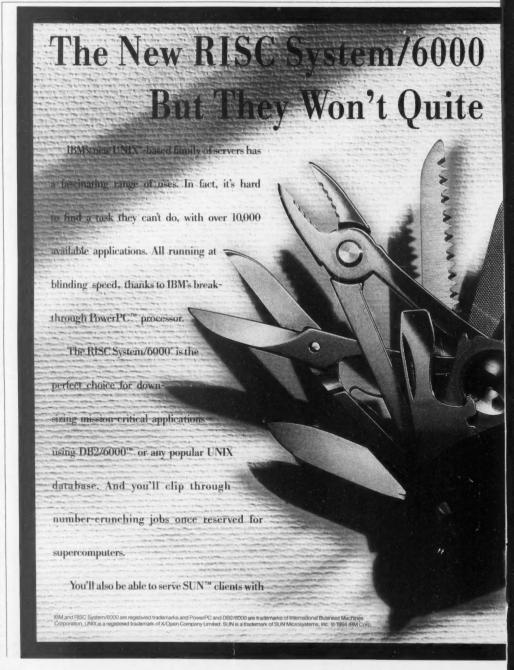
Highly complicated

That leaves the most complex type of object: the managed object. This term covers a wide variety of sins, including computers of all types, network devices of all types, different kinds of local- and wide-area network connections, databases, video clips and text files, to name just a few. In this case, why not leave the objects to the programmers and product developers? Everyone else will be better off if they designate all these things by their actual names.

So c'mon, vendors. Deliver us from robust object-oriented solutions, and please don't call a spade an agricultural object.

Moore is a *Computerworld* senior editor, networking.

Q+E

tially due to the fact that the company doesn't have other products that fit in this market space."

Other developers and industry analysts, however, enthusiastically greeted the new capabilities of Release 6.0.

"They've had the same price since it was packaged with Excel, and the $99 upgrade to a full-blown package is an incredible deal for what you get, though the $499 tag would be well worth it," said Doug Jankuski, an analyst at United Healthcare Corp. in Minnetonka, Minn.

This version contains several features that Jankuski said are critical. These include index support for Clipper databases, which lets users obtain data faster; print preview, which lets users zoom in on reports or view multiple pages; graphics support; and full support for Microsoft's Object Linking and Embedding 2.0.

Application Development

Baler Software Corp. has announced Visual Baler 1.0, a spreadsheet-based development tool.

According to the Rolling Meadows, Ill., company, Visual Baler 1.0 lets spreadsheet users develop analytical and number-crunching graphical applications.

Users can use existing spreadsheet files as a starting point for preparing self-running Windows programs without any knowledge of programming languages. Visual Baler 1.0 automatically generates a Windows .EXE spreadsheet application that includes a title screen and a program icon.

The application framework includes prebuilt routines for functions such as file open and save and printing.

Visual Baler 1.0 costs $499.
▶ *Baler Software*
(708) 506-9700

Visual Edge Software Ltd. has announced the Cross-Platform Toolset.

According to the St. Laurent, Quebec, company, the Cross-Platform Toolset provides all the objects, libraries and documentation needed to develop applications for multiple platforms.

The product is built on native tool kit controls so the ported application interface looks and behaves exactly like an application written directly to the native graphical user interface. To deploy the application, the developer recompiles and relinks the code with each platform's object library.

The Cross-Platform Toolset is available for Hewlett-Packard Co.'s HP/UX and Sun Microsystems, Inc.'s SunOS and Solaris platforms with application deployment on Windows 3.1. Support for Microsoft Corp.'s Windows NT, the Macintosh and OS/2 platforms is slated for later this year. The Cross-Platform Toolset costs $2,500.
▶ *Visual Edge Software*
(514) 332-6430

InterSystems Corp. has announced Visual M, graphical user interface (GUI) development software.

According to the Cambridge, Mass., firm, Visual M is based on a combination of Microsoft Corp.'s Visual Basic and the ANSI-standard M language. It is part of InterSystems' GUI of Choice facility, which features alternative GUI development environments for high-volume client/server applications.

Visual M is included in InterSystems' Open M/SQL Developer for $395.
▶ *InterSystems*
(617) 621-0600

Interactive Development Environments, Inc. has announced that Software Through Pictures for the Object Modeling Technique (STP/OMT) supports Persistence Software's Persistence, a development tool that links objects to relational data.

According to the San Fransisco company, this support provides object-oriented transaction processing that extends the on-line transaction processor mechanisms of relational databases to objects. STP/OMT supports requirements analysis, design, implementation and documentation, among other tasks.

STP/OMT costs $12,000 per user.
▶ *Interactive Development Environments*
(415) 543-0900
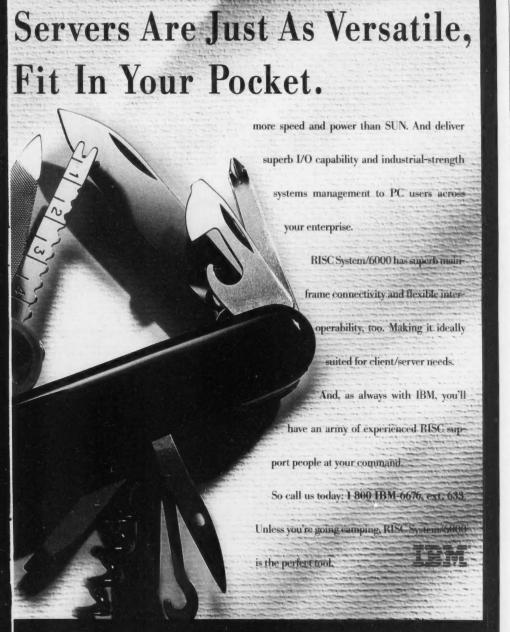
Product short

Intersystem Concepts, Inc. has introduced the Everest Authoring System for Windows, an interactive multimedia development tool for creating computer-based training applications, performance support systems, kiosk applications and presentations. The system features multilevel, object-oriented authoring and visual drag-and-drop. Cost: $4,395. Intersystem Concepts, Columbia, Md. (410) 730-2840.

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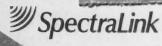
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Ameritech

Your Link To Better Communication

A few wholesale distributors still manage to be indispensable to discount retail giants like Wal-Mart. What have they got that other wholesalers haven't got?

A ...

unique wholesaling proposition.

Ron Chaimo-witz, general manager at GTIS, says, 'The business is ours only as long as we continue to perform'

CLAUDIO EDINGER

By every indication, Wal-Mart Stores, Inc. has never had much trouble selling anything. With $67 billion in revenue in 1993, America's largest and fastest growing retailer seemingly moves everything — from Barney dolls to double-breasted blazers — with equal aplomb. So who needs middlemen like wholesale distributors?

Yet the company announced in April that a New York wholesale distributor, GT Interactive Software (GTIS), had won a contract to market and manage sales of PC software in its stores.

You wouldn't expect the Bentonville, Ark.-based merchandising superpower to stumble over something so eminently salable as PC software. But as it turns out, rack jobbing, as it's called in the trade, can be a real nuisance to mass merchants. Each of the potentially hundreds of software titles on the average store rack requires a unique stock number, or SKU, making inventory management difficult. Software also comes boxed in many shapes and sizes, so physical distribution is a headache.

And these days it's plain hard to find good part-time help who can explain to casual shoppers such

BY BRIAN MCWILLIAMS

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It also comes with built-in Plug and Play capabilities, bringing new ease to the process of adding add-on devices and expansion cards.

And while we made the ProLinea easier to work with, we also made it easier to own. It meets Energy Star standards, to save money in the long run. Better still, it's priced to keep your costs down today—starting at only $950.* That, of course, includes all the benefits of owning a Compaq, from our free three-year warranty** to our free 24-hour helpline.

If you'd like a demonstration of affordable, easy-to-use power, go try a ProLinea at your nearest authorized Compaq reseller. If, on the other hand, you'd like to receive specifications via fax, just call 1-800-345-1518, choose the PaqFax option and request document #4032.

It's a moment in computer history everyone can savor — as Compaq raises the value of a dollar once again. **COMPAQ**

Wholesale

fine points as the relative benefits of Windows or OS/2.

No wonder Wal-Mart inked the deal with GTIS, a New York-based subsidiary of Good Times Entertainment Co., which received a Vendor of the Year award from Wal-Mart in 1991.

The agreement comes at a time when price-conscious outfits such as Wal-Mart, Kmart Corp., Target Stores and their mega-retail brethren are putting a terrible squeeze on the firms that serve as a conduit between retailers and manufacturers.

It's not enough anymore for wholesalers to have a perfect fulfillment record and high-quality products, says Patrick Dolan, partner-in-charge of Arthur Andersen's wholesale distribution industry practice in Chicago.

"There's a power shift out there. Big retailers are telling their suppliers, 'If you want to keep my business, you have to constantly add unique value, and you can't charge me anything for it,'" Dolan says.

For many wholesale distributors, already limping along on the slimmest of margins, that can be an impossible assignment. But a handful of technology-savvy firms are discovering they can beat the reaper by combining their systems know-how with innovative marketing and merchandising programs.

"To survive in today's marketplace, wholesale distributors must provide a wider range of value-added services," says Michael Cantwell, national director of Grant Thornton's manufacturing/distribution practice in Chicago.

Cantwell says the following capabilities can enable wholesale distributors to avoid obsolescence:

● Sophisticated inventory management systems.
● Flexible product packaging.
● Innovative merchandising and marketing programs.
● Nationwide end-user support.

"Distributors who can't function as an extended member of the merchandiser's team will fall by the wayside," Cantwell warns.

TAKING AWAY THE RISK

In mass merchandising, where performance is measured in sales dollars generated per foot of store space, nothing pains store managers like running out of stock on a popular item or being overstocked on a dog nobody wants.

According to Ron Chaimowitz, general manager at GTIS, "We exist to make life as simple as possible for our customers. One way we can do this is by taking all the inventory risk away from them."

The risks are plenty. According to Dolan, inventory typically constitutes the single largest asset on a wholesale distributor's balance sheet. Inventory that is managed improperly — for example, if a distributor gets stuck with a load of nonreturnable items — can nearly sink a company.

To ensure its customers' software racks are always stocked for maximum sales — while keeping its own safety stock at a minimum — GTIS relies on a proprietary automatic replenishment system, a prerequisite for competitive advantage as a wholesaler.

The GTIS system runs on an IBM RS/6000. It handles the more than 300 software titles that GTIS distributes to some 1,400 Wal-Mart stores and its other major customers, Chaimowitz says.

Each night, GTIS downloads sales data from Wal-Mart's computers and runs it against a replenishment algorithm customized for individual stores. The system tracks data such as safety stock levels and reorder points and automatically generates purchase orders.

Unlike many Wal-Mart vendors that are responsible only for replenishing the retailer's regional warehouses, GTIS ships directly from its New Jersey distribution center to individual stores.

The facility is run by a paperless pick system. Instead of filling orders from a printout, warehouse workers are guided around the 750,000-sq.-ft. center by a network of lights mounted above each bay. The lights indicate which product should be picked next, and a digital readout shows the number of boxes to be added to the order. The computer-driven system also generates stickers using specific retailers' SKUs and pricing. On-line since 1993, the system enables GTIS to provide 48-hour turnaround on orders.

With the growth of SKUs and the increase in labor costs, sophisticated inventory management systems and automated warehouses are starting to show up in the business plans of more wholesale distributors. Handleman Co., one of the nation's largest and most successful wholesale distributors of music and videos to mass merchants, has just opened a 324,000-sq.-ft. automated distribution center in Nevada to serve the western U.S.

Like GTIS, Handleman relies on a proprietary inventory management system, but the Troy, Mich.-based company designed its system around the "perishable" nature of the products it carries.

The system tracks Handleman's inventory at more than 6,000 locations. It took 18 months to build and has been on-line since 1989.

As new releases come out, the IBM ES/9000-based system gathers data on a title's first week of sales and projects whether it will be a hit, a dud or something in between. It then generates an appropriate reorder scheme. When sales of a hit title begin to drop precipitously, as they often do, the system adjusts quickly to avoid overstocking.

"It's our responsibility to pick the hits," says Mark Schwartz, vice president of marketing. "If we guess wrong, we offer our customers a 100% exchange guarantee."

DOING THE HOMEWORK

Thanks in part to its expertise in building systems, GTIS boosted Wal-Mart's software sales an estimated 60% in the first quarter of 1994 after taking over managing the retailer's software racks last year, according to *Computer Retail Week*. And Handleman, which services more than 20,000 retail outlets, did more than $1 billion in sales.

Because some product lines are very specialized and ever-changing, Cantwell says large retailers depend on wholesalers to know the product lines for them. This is an important part of the service they provide, he says.

If more retailers did a full economic analysis of buying directly from manufacturers, they might discover using a wholesale distributor is often in their best interest, Dolan says.

"Buying on product price alone, without looking at the total delivered cost of the product, is a mistake," he says.

When executives at membership warehouse club Price/Costco looked for a way to include books among their offerings, they did their homework carefully. Their conclusion: The best option for getting books from the printing

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> **"We exist to make life as simple as possible for our customers. One way we can do this is by taking all the inventory risk away from them."**
>
> **RON CHAIMOWITZ**

WHY RETAILERS WON'T BUY FROM WHOLESALERS:

➤ The manufacturer and/or retailer can manage their own inventory more effectively.

➤ Wholesaler lacks unique, value-added services.

➤ Buying direct results in lower overall costs for sales, marketing, inventory and transportation.

WHY RETAILERS BUY FROM WHOLESALERS:

➤ Demonstrated ability to perform services more efficiently.

➤ Unique services not available elsewhere. Examples include special product packaging such as private labels; innovative marketing and merchandising programs; and local end-user support such as product customizations and service.

Source: Mike Cantwell, national director for manufacturing/distribution, Grant Thornton, Chicago

press to consumers was to turn the responsibility over to San Diego-based wholesale distributor Advanced Marketing Services.

According to Jim Dixon, executive vice president of marketing and merchandising at Advanced Marketing, the task of selecting, ordering and managing book inventory is daunting to mass merchants. More than 50,000 new books are printed each year by thousands of active publishers.

"There's no way a mass merchant can be successful buying books directly," Dixon says. "By partnering with us, they have consolidated access to over 300 publishers. Our strategy is to focus on a limited number of titles that will perform best in the customers' location."

THE PERFECT NICHE

Since it began operations 12 years ago in a small warehouse, Advanced Marketing has built its annual sales to $300 million and has begun expanding internationally. Dixon say it has virtually no competition in its niche today.

Like other successful wholesale distributors to mass merchants, Advanced Marketing keeps costs down with careful inventory management, analyzing sales patterns to determine a particular store's capacity to sell a certain title. The wholesaler's Digital Equipment Corp.

VAX-based system supports a level of detail that exceeds most inventory management systems.

"At any time, I can tell you our inventory on a particular title, whether it's in our warehouse, on a truck somewhere or on our customers' shelves," Dixon says. "I can also give you the title's sales history broken down by store, as well as its projected sales."

SELLING IT

To be sure, technology enables smart wholesale distributors to take the guesswork out of their operations and keep costs low. But excellence in distribution is not sufficient to win the business of mass merchants. Successful wholesalers take a broader view.

"The service we provide is managing the retail space," Schwartz says. Handleman develops complete marketing and merchandising programs for its customers, absorbing the costs for everything from signage, advertising and in-store fixtures to ROM-based multimedia kiosks that give shoppers sneak peeks at the department's music and video offerings.

Similarly, Advanced Marketing provides integrated marketing programs to its customers that include direct mail, special displays and book signings by celebrities such as Norman Schwarzkopf

and Ivana Trump. GTIS employs a cadre of merchandising experts who work the field, helping stores solve problems such as how to draw shoppers into the "bullpen" where software and electronics are usually sold.

Despite the current success of these wholesale distributors, Dolan says the industry as a whole remains in deep trouble and that a shakeout is under way. "It's becoming increasingly hard to find any bright lights," he says.

For now, these firms take some satisfaction from knowing they have bucked the trend. But it's second nature for wholesale distributors to take nothing for granted.

"You live by your wits. As a middleman, you serve at the pleasure of manufacturers and retailers," Dixon says. That sentiment is echoed by Chaimowitz. "The business is ours only as long as we continue to perform," he says. ∎

McWilliams is a free-lance writer in Durham, N.H.

> "There's a power shift out there. Big retailers are telling their suppliers, 'You want to keep my business, you have to constantly add unique value, and you can't charge me anything for it.'"
>
> **PATRICK DOLAN**
> (Partner-in-charge of Arthur Andersen's wholesale distribution industry practice in Chicago)

SAYING ONE THING, DOING ANOTHER . . .

Many wholesale distributors feel the costs of technology outweigh its benefits . . .

. . . yet 97% says IS will be a key factor in the future — not only as a cost of doing business, but also of retaining business.

With the growth of SKUs, sophisticated inventory management systems are becoming crucial for wholesale distributors . . .

. . . yet less than 25% of the industry is using technology such as EDI, bar coding and scanning and on-line order-entry systems.

Labor costs are increasing faster than other operating costs, and customers are expecting fast turnaround times . . .

. . . yet only 54% use some form of automated warehousing.

Source: National Association of Wholesale Distributors, Washington

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Intelligence
Files

IS center gets go-ahead

In January, the Conference Board will launch a new service for information systems executives tentatively known as the Center for Information Services.

The center will sponsor IS-related research and one-day forums on systems development, telecommunications and monitoring new technology.

The New York-based organization already runs two 50-member councils for North American IS executives and an annual IS conference. The director of the center will be George Newman, who will continue to manage the council programs.

Companies that join the center can participate in IS council meetings. The membership fee is $6,000.

The Conference Board is an organization of 2,000 corporate members that sponsors forums, conferences and research programs on a wide variety of business topics for executives.

Help wanted: IS architects

Psst. . . . Want to make up to $300,000 a year? Regional bell operating companies, as well as major financial services and IS consulting firms, are searching for senior IS architects, database architects and systems integration planners, according to Beverly Lieberman, president of Halbrecht Lieberman Associates, Inc., an IS executive recruitment firm in Stamford, Conn. Total compensation for these jobs ranges from $200,000 to more than $300,000.

"Architecture has become a singularly important function in some companies," Lieberman says. Senior IS architects are now reporting to chief information officers and drawing the same total compensation as the heads of application development or computer operations.

Why are IS architects hot? "All those companies are figuring out the best ways to move off their mainframe dependencies. When you do that, you have to figure out how you will build your infrastructure. Systems organizations are building their houses again, and when you build a house, you hire an architect," she says.

Companies are shelling out big bucks to land the few professionals who are highly polished businesspeople and highly skilled technicians, Lieberman says.

Internet job search

With record numbers of its members unemployed, the Institute of Electrical and Electronics Engineers (IEEE) has launched an electronic service to put job seekers in touch with potential employers.

Beginning this month, the U.S. activities division of the IEEE is offering an electronic job-listing service to give thousands of employers and recruiters access to hundreds of thousands of electrical, electronics and computer engineers and computer scientists.

For a $10 to $15 fee, employers and placement services can list job openings on the Internet via regional or national autoresponse files posted by IEEE-USA. The service is free to all job seekers who have access to the Internet.

To gain access to the service, job seekers must send an E-mail message to the designated Internet address. The requested files will automatically return to the individual's E-mail address. Job listings will be updated monthly.

For more information, contact William R. Anderson, IEEE-USA, 1828 L St. N.W., Suite 1202, Washington, D.C. 20036, (202) 785-0017, fax (202) 785-0835 or via the Internet at w.anderson@ieee.org.

your forms or their constituent objects are revised, data locations are changed or business rules are modified, and all of your applications are automatically updated.

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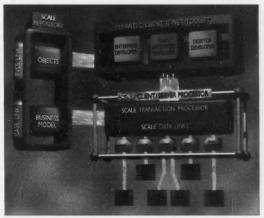
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most of whatever database systems work best for you.

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THE GHOST OF IS FUTURE

BY ROCHELLE GARNER

Disposable systems?
Disposable people?
Widespread end-user programming?

Leilani Allen, the head of IS at PNC Mortgage, has seen the future, and it doesn't look friendly

The topic had seemed straightforward enough: Cost accounting and chargebacks in the year 2000. But as usual, Leilani Allen managed to stun her audience, which had assembled for a conference of data processing financial managers.

Her message: You're all doomed. Your jobs will have no reason to exist.

Heads swiveled to hear better. Disbelief passed over the audience like a shock wave. Hands shot into the air to question her assumptions.

Given the subject matter, her talk went surprisingly well.

The senior vice president of information technology at PNC Mortgage Corp. of America in Vernon Hills, Ill., Allen, 44, can leave a lasting impression. She's technically astute and business-savvy. But she also possesses a bluntness that many find disquieting.

But get over it, advises Jim Dowell, PNC's second vice president of network operations. "Pay attention to what she's saying because in 10 years she'll be running the world."

"Leilani has the amazing ability to decipher the right thing to do even if that solution is politically inexpedient or rubs people the wrong way," says Dave Vincent, president of management consulting firm The Information Group, Inc. and Allen's former boss at software house Boole & Babbage. "I cannot remember a single idea of hers that hasn't worked out."

What Allen is saying is likely to be unpopular — like her views on disposable systems:

"We are moving to client/server to bring flexibility to the creation and design of systems," Allen explains. "Logically, then, we should build systems that meet a business need and scrap them when that need changes. If you accept that, you realize it has tremendous ramifications in how we invest in technology."

Or her view that chargebacks are obsolete:

"Chargebacks are based on mainframe technology. But in the client/server world, you don't know where a transaction is at any time: at the client? at the server? What's more, few chargeback algorithms even deal with PC technology."

And most frightening of all, accept that your old skills are worthless or die:

"I took a copy of *Computerworld* to my staff meeting and said, 'You guys read the want ads? Well, I do, and none of you qualify for any of these,'" Allen says.

Dowell was there. "Half the guys looked like they'd been hit with a two-by-four, and the other half realized that if they stayed with the old mainframe technology, they were indeed disposable."

Allen's point: Stay ahead of your discipline. Today, that means learning all there is to know about client/server instead of fighting it. "My attitude is, quit futzing around with arguments against client/server. Realize that this is reality, and ask yourself how to proactively deal with it," she says.

Her ideas are shaking up PNC: Prepare for disposable systems; throw away the old chargeback and capacity-planning paradigms; keep core information technology competencies for your group and let users handle the rest.

Allen says certain skill sets, such as operations systems support and developing strategic applications, will never become part of the responsibility of the user community. But information systems should let users build nonstrategic applications.

"On the other hand, our job is to say what the user can and should do, and we will create models to let them do it. That aligns the organization for change. Let the accountants create an application for new tax laws, as long as they follow the disciplines we lay out, the architecture, the roadways and security guards. All of that has to stay within [information technology], driven by a stated vision of the company and the technology."

NO STRANGER TO CHANGE

Obviously, this CIO embraces change. Considering Allen's upbringing, anything else would be surprising. An army brat, she attended eight elementary schools and four high schools in Europe, the Far East and California. She received her bachelor's and master's degrees in international relations and her doctorate in comparative politics. Why politics? Because nothing ever stays the same.

"When I was in school, I hated computers and computer people," Allen says. "I wondered why anyone would ever do this. It wasn't until I took a part-time job at Visa and saw how computers could transform the workplace that I took to technology."

Allen has also moved around professionally. She worked for a variety of companies in a variety of functions, from capacity planning and performance management to technical support and system development. That background has given her a keen sense of business needs.

"Senior management views [Allen] as a visionary technologist," Dowell says. "And I would humbly submit that is not how people viewed the head of [information technology] before her arrival."

FUTURE IS NOW

Right now, Allen is priming PNC to pursue the goal of disposable systems.

Information technology "has a tendency to build for eternity," Allen says. "The problem is, our monument can become a grave stone. Businesses now change constantly. And if they want to change every nine months, systems can't be the factor that keeps them from changing."

"It's the issue of flexibility," she says. "How quickly can we bring a product to market? Get into a new business? We have to have an architecture in place where the answer is 'pretty damn quickly!'"

Her plan: to make information technology strategic and relinquish the tactical to the user community. The first step? Install this year the networking and operations infrastructure, which will become the foundation for next year's software directions. Dowell's group is busy installing the hardware as well as everything having to do with security, network monitoring, disaster recovery and support. In the meantime, another team is laying out how PNC will move its applications from the mainframe. The target date to complete that process is one year.

"It's my belief that people go about client/server backwards — first building applications," Allen says. "You have to deal with the operations issues as you are doing application development. The reason is you have to look at the network, the traffic and how to build the client/server system all at the same time."

The result: core people, adept at core skills, shaping strategic efforts — just the way IS is supposed to work.

In Allen's vision of the future, the only job security is to be the best at what you do yet still be willing to discard what you know so well. To do otherwise makes you a disposable person.

"This is not a friendly truth. But it is a truth," she says. ∎

Garner is a free-lance writer in San Carlos, Calif.

Leilani Allen's
10 GREAT "TRUTHS"

1. **Client/server will fundamentally change the basic economics of information technology, from one where information resources are an asset to where they are a disposable commodity.**

2. **Failure to dispose of these resources promptly will be the chief economic sin.**

3. **We will replace/upgrade our hardware throughout the enterprise every 18 to 24 months.**

4. **We will replace/re-engineer our application systems every 24 to 36 months.**

5. **Information technology costs will be subsumed in line-of-business expenses; it will no longer be possible to identify a separate "information technology cost" or "information technology benefit."**

6. **Infrastructure and support costs will be the overwhelming piece of the pie.**

7. **No one (outside of the Pentagon) will run his own data center or network.**

8. **Usage-based chargeback for computing resources will no longer be technically feasible or organizationally desirable.**

9. **Speed of delivery will be the only way to measure the value of an information technology investment.**

10. **None of us will accept these realities as they appear.**

> **"I took a copy of *Computerworld* to my staff meeting and said, 'You guys read the want ads? Well, I do, and none of you qualify for any of these.'"**

Calendar

Windows Solutions Conference & Exposition. San Francisco, Sept. 7-9 — Keynotes: Roger Heinen, senior vice president of Microsoft Corp.'s developer's division; Lee Reiswig, president of IBM's Personal Software Products division; and Robert McDowell, vice president of Microsoft Strategic Enterprise Services. Contact: Ziff-Davis Exposition and Conference Co., Foster City, Calif. (415) 578-6900.

Manufacturing '94. Chicago, Sept. 7-14 — Topics include networking, cost-cutting, quality improvement and technology integration. Contact: Society of Manufacturing Engineers, Dearborn, Mich. (313) 271-1500.

Video Expo/Image World. New York, Sept. 9-14 — Seminars on emerging technologies, desktop video, computer graphics and animation, corporate media production, multimedia and digital imaging and publishing. Keynotes include "Beyond Reality — New Frontiers in Computing Imaging" by Alvy Ray Smith, co-founder and president of Altamira Software Corp., and "Non-Linear Editing — Cutting Through the Hype" by Shonan Noronha, editorial director of *AV Video* and *Computer Pictures.* Contact: Knowledge Industry Publications, Inc., White Plains, N.Y. (914) 328-9157.

SEPT. 11-17

1994 International Client Forum. Orlando, Fla., Sept. 11-14 — Contact: Susan Spatafora, System Software Associates, Inc., Chicago, Ill. (312) 641-2900.

The 1994 International Communications Association's Management Institute. Evanston, Ill., Sept. 11-14 — Theme: "Technological Change: Strategies for Information Systems and Telecommunications." Contact: International Communications Association, Dallas, Texas (214) 233-3889.

The Annual Energy and Technical Services Conference. Seattle, Sept. 11-14 — Keynote: "The Evolution of the Store Engineer Role" by David Freedman, senior vice president of corporate facilities and president of Giant Construction Co., a division of Giant Food, Inc. Contact: Food Marketing Institute, Washington, D.C. (202) 452-8444.

Forum '94. Denver, Sept. 11-14 — Contact: Laurie Haberthier, Storage Technology Corp., Denver, Colo. (303) 673-5524.

Personal Communications Services (PCS) Auctions: Getting an Edge on the Competition. Washington, Sept. 12 — Focus: the Federal Communications Commission's broadband PCS auction rules; applying game theory principles to competitive bidding; strategies for combined bidding; opportunities for designated entities; and decision-support systems development. Contact: Telestrategies, McLean, Va. (703) 734-7050.

First Annual Conference on Cable TV. Washington, Sept. 12-13 — Focus: Industry trends, opportunities and strategies for equipment vendors, regulatory and financial opportunities and technological issues. Contact: Wanda Napolitano, Frost & Sullivan, New York, N.Y. (212) 964-7000.

Smart Color '94. Stanford, Calif., Sept. 12-13 — Topics include overview of color engineering and standards; device-independent color in operating systems; analysis and design of Smart Color scanners, monitors and printers; analysis of color management systems; and ColorSync 2.0 workshop. Contact: Stanford University, Stanford, Calif. (415) 715-6275.

Advanced Information Management Conference. San Francisco, Sept. 12-14 — Theme: Best-of-practice strategies for applying advanced technologies to building flexible architectures supporting business process re-engineering. Sponsor: Meta Group, Inc.'s Advanced Information Management Strategies Service. Contact: Meta Group, Westport, Conn. (203) 226-6382.

Commercial Parallel Processing Conference. Chicago, Sept. 12-14 — Contact: CMP Trade Show & Conference Services, Jericho, N.Y. (516) 733-6827.

Electronic Commerce: Helping to Reinvent Government. Washington, Sept. 12-15 — Features sessions on technology applications and management issues and practical how-to ideas for government agencies and vendors. Contact: U.S. Professional Development Institute, Silver Spring, Md. (301) 445-4400.

SQLBase. The Database

•REPLACING 1s and 0s with objects is easy. Mastering the mind-set for object-oriented programming is hard. Here to smooth your way is

THE OOP SURVIVAL GUIDE

By CARL A. ARGILA

So you've decided to abandon traditional application development methods and take on new objected-oriented ways. Before you begin, bear in mind you're facing far more than a technical challenge. Once your developers master the programming skills and languages that object-oriented projects demand, you will need to create a workplace that will help them use those skills effectively.

That's not easy to do. You are likely to discover, just as Niccolo Machiavelli did, *"There is nothing more difficult to take in hand, more perilous to conduct or more uncertain in its success than to take the lead in the introduction of a new order of things."* To help you take the lead in the new object-oriented order of things, here's a 12-step survival guide.
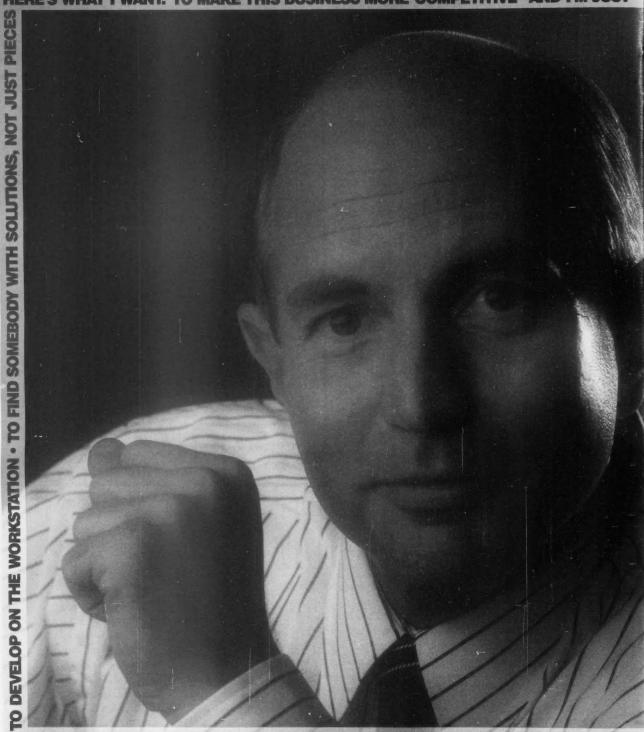
STEP 1

Decide why you are making the move

THE KEY REASON TO INTRODUCE object-oriented programming (OOP) methods is to reduce the time it takes your development staff to create business applications over the long haul. At the heart of any OOP strategy is the reuse theory: The objects and systems designed for one application can be redeployed in new configurations for others. Bear in mind that you won't reap "reuse" benefits until the second or even third project. Once you have articulated this message to the development team, put it in writing. Make it no longer than one page.

HERE'S WHAT I WANT. TO MAKE THIS BUSINESS MORE COMPETITIVE—AND I'M JUST

TO DEVELOP ON THE WORKSTATION • TO FIND SOMEBODY WITH SOLUTIONS, NOT JUST PIECES

WORTH OF EXISTING CODE • TO GIVE MORE PEOPLE MORE ACCESS TO MORE DATA •

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STEP 2

Accept that the technology is here to stay

NOW THAT YOU ARE ADOPTING OOP methods, it's highly unlikely that you'll revert to traditional ones. Make sure your application developers know this. Because that may not go over well, I advise a gentle but firm approach. Don't dictate, "Thou shalt use objects — or else." Instead, ask each programmer to generate a list of OOP pros and cons, then meet with each member individually to discuss items on their lists. Use this information to create well-balanced project teams, made up as evenly as possible of pro and con members. In other words, don't put all the negative people in one group. Address in a group meeting the top con items voiced by staff members.

STEP 3

Take stock of your assets

OOP REQUIRES SPECIFIC SKILLS. Which ones are available in your organization, which ones can your staff acquire through training and which ones do you need to bring in from outside? Know the answers to these questions before you replace your Cobol-proficient staff with an army of Smalltalk or C++ programmers. Your staff is likely to have a wealth of knowledge about the business units they serve. Their expertise in communicating with users and capturing business knowledge is crucial to the project's success; you may decide to keep them on board for that part of the process and outsource the actual programming effort.

STEP 4

Don't develop a full-scale pilot project

FULL-SCALE PILOT PROJECTS take a long time and can cost hundreds of thousands of dollars. If they fail, companies often abandon — for good — the very technology the pilot intended to promote.

To minimize the likelihood of that, set up what I call a "symbiojet." This minipilot project of sorts has a symbiotic relationship to an existing mission-critical application, such as a title and escrow management system that could benefit from an object-oriented database. The database portion of the system could be spun off as a symbiojet. If the object-oriented project doesn't work the first time around, you can fall back on the existing relational database. The point: Choose a project that can fail without ruining the company.

STEP 5

Establish meaningful metrics

SUCCESSFUL PROJECTS are well-monitored. You need to measure the progress, quality and efficiency of your OOP project on a regular basis, then report back to those involved. Doing so helps spot trouble before it gets out of hand. Steady progress reports boost morale.

There are many ways to measure progress. One project manager I know established a metric based on the number of compiler invocations per person, per module and per unit of time. As the staff develops a module and the module nears completion, this metric should approach zero, and modules that don't conform to this pattern should be singled out for attention. Note that you have to use metrics carefully, making sure you monitor the right things. For instance, using the metric described above to check on attendance would destroy its value, not to mention demoralize your staff.

STEP 6

Expect resistance to change

IN REPLACING OLD DEVELOPMENT METHODS with new ones, you are likely to encounter all manner of behaviors.

Expect to see "creative avoidance," i.e., "We can't do this. We don't have the right CASE tool, the right methodology." In some cases, a committee will form with a mission to identify that perfect tool or flawless methodology. Be aware this may be a stalling technique. Another strategy: "malicious compliance," i.e., "You want objects, I'll give you objects." In this insidious game, players work to make the project fail, taking every instruction literally and looking for loopholes.

Note that creative avoiders are usually well-intentioned. Training will increase their comfort levels. As for the others, just hope their behavior stops.

STEP 7

Focus on object-oriented programming alone

DON'T INTRODUCE OTHER TECHNOLOGIES at the same time you implement OOP. Doing so is asking for trouble.

A few years back, one of my clients made this mistake. In launching a major telecommunications project, it mandated the use of computer-aided software engineering (CASE) tools for application development. Simultaneously, it switched from Cobol to C and from a mainframe to a Unix platform, replacing a single processor with a client/server network. The project failed. The compiler wasn't working. There was a problem with the client/server transaction processing system. The reasons were endless, and all legitimate. If it's imperative — and sometimes it is — to introduce two technologies simultaneously, run concurrent pilots. Integrate them only after you understand both thoroughly.

STEP 8

Solicit advice from experienced veterans

WHILE IT'S TRUE THAT companies have just begun to take advantage of object-oriented technology (see chart at right), that's no excuse for wandering aimlessly through uncharted territory. Training programs and seminars devoted to the topic are full of people who may have already solved the problems you are facing. Network with them. Join discussion groups on the Internet. Call your local IS association. Contact your vendor. There's help out there, and you have to look for it. The point is this: Learn lessons from those who have completed successful OOP development efforts.

STEP 9

Create your information model with care

AT THE OUTSET OF THE PROJECT, you need to create an information model, which will establish a basic set of objects on which to base future systems. It's critical to get the model right. The following story illustrates why:

A European country replaced a legacy system designed to track government benefits with an object-oriented application. The programmers identified object classes with names such as "pension" and "beneficiary." The system worked well until it was time to update the "legislative rules" embedded throughout. Programmers had never created a legislative rules object class. So instead of issuing one command to perform a global update, they had to change each one step by step. That defeats the point of OOP.

STEP 10

Specify a time frame and stick to it

THE PROJECT DELIVERY DATE never slips. Period. If it does, the technology you are trying to promote will be deemed a failure. If you can't meet the deadline you have established, reduce the scope of the project. That may mean reducing, limiting or restricting the scope of the features offered. The important thing is to deliver the critical pieces on time.

Getting the first project out when promised is a real morale booster and will serve you well in the long run. Remember, your long-term goal is to develop all your applications using object-oriented methods.

Looking Ahead: Object-Oriented Programming

1993 to 1997
- Applications based on Microsoft's Object Linking and Embedding appear.
- Visual Basic is the most common development environment for object-oriented programming.

1994 to 1999
- Wide use of OOP begins.
- Systems integrators deliver applications based on the technology.
- IS departments begin to outsource OOP projects.

1996 to 1999
- Object infrastructure appears.
- OOP is commonplace.

Source: Forrester Research, Inc., Cambridge, Mass.

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STEP 11

Promote the new culture you have built

NOW IS THE TIME to establish the basic mechanism for reusing objects in your next programming effort in your organization. To be truly effective, that effort needs to be coordinated at the corporate level. It doesn't begin so much with reusing the objects your programmers have developed as with the corporate commitment to continue using object-oriented technology.

How do you make this happen? One data services company, for instance, instituted a program in which developers receive a onetime financial reward when the company accepts a given object in its reuse library. They receive royalties when other developers reuse their objects in other projects. This way, reuse has become part of the company's culture.

STEP 12

Conduct a postmortem
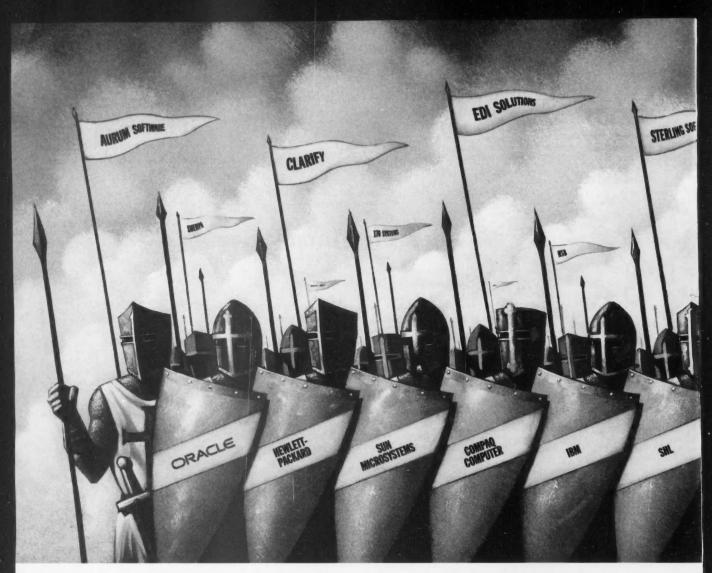
ASK YOUR TEAM: What went right? What went wrong? What should be done differently next time?

You may discover that your software development team needs to be organized differently. You may find, for instance, that it makes sense to split into two groups: object builders and system builders. The first creates individual objects. They are programmers at heart. They may not care how those objects are ultimately used, but they love a technical challenge.

System builders, on the other hand, thrive on understanding the business processes and assembling collaborations of objects that build systems to serve the business well.

You will no doubt also find that your comfort level with object-oriented technology has grown enormously. That, more than anything, should encourage reuse and help generate the productivity gains the technology is designed to promote. ∎
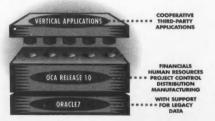
Argila is a software engineering consultant in Pico Rivera, Calif. He offers consulting and training services in systems analysis and design, development methodologies, project management and computer-aided software engineering. He can be reached at (800) 347-6903 or on the Internet at carl@acm.org.

SECRETS OF SUPPORT SUCCESS

Cross-training, recentralizing and using departmental liaisons are among the staffing strategies of a mixed environment

By Leslie Goff

Satisfying user needs with limited resources is a challenge in a mixed computing environment. Support pros must be willing to juggle responsibilities while learning new skills on the fly — particularly in OS/2 and Unix shops where a cacophony of other platforms can exist side by side.

Solutions for achieving the required skills to support mixed environments are highly individualized, as shown by the following three sites. But the lesson is the same: Do more with less.

Glaxo

Research Triangle Park, N.C.
Walter Turyn, principal consultant/information technology architect

Environment: MS-DOS/Windows workstations; Unix workstations; Apple Macintoshes and PowerBooks; Microsoft Windows NT; Novell NetWare; IBM LAN Server and LAN Manager and Pathworks servers; Sun Solaris database server; Hewlett-Packard HP/UX, VMS and MVS platforms

Staffing strategy: Cross-training

Glaxo moves to Windows

When Glaxo, Inc.'s OS/2 server environment became difficult to support and the industry took a turn in another direction, the company began a move to a Windows-based distributed environment.

Its end-user support staff of approximately 30 people is responsible for more than 3,000 Windows workstations. In turn, Walter Turyn, a principal consultant/information technology architect, works with support staff to identify cross-training opportunities. Turyn's goal: to leverage existing skills and create expertise in new operating systems.

For example, VMS experts have taken Microsoft Corp. Windows NT classes because the operating systems share similar file structures and design features.

"Each requires the same kind of thinking and approach, which is a key component of any of the cross-training that we need to do," Turyn says.

In addition, Glaxo trained its MS-DOS support staffers in IBM's OS/2 and later cross-trained OS/2 support staff in Windows NT. To develop Unix expertise, Glaxo cross-trained its midrange support staff vertically: MVS staffers learned AIX, VMS staffers learned OSF/1, and MPE staffers learned HP/UX. "There seems to be a brand-name loyalty among those folks," Turyn says. "That's a curious thing. I don't know if it's justifiable or just comfortable."

While the company had some success growing in-house Unix expertise, Turyn says he ultimately hired two new staffers for their Unix backgrounds. He also contracted out VAX service and support two years ago, freeing his staff to concentrate on newer platforms.

Turyn estimates that Glaxo spends $1,500 to $2,000 per person per week on training and has about 10 different staffers in training at any given time. He notes, "That's not a huge amount compared with the return on the investment or with the cost of hiring someone new."

River Authority changes flow

When the Lower Colorado River Authority began migrating its users to a common graphical user interface two years ago, it wanted to step up service and support with key information systems liaisons in every unit. IS would operate the

Lower Colorado River Authority

Austin, Texas
Carol Thomas, manager of end-user computing

End-user computing environment: MS-DOS/Windows workstations; Unix workstations; Apple Macintoshes; Microsoft Windows NT (pilot application), OS/2 server

Staffing strategy: Form a centralized help desk

company's LAN servers, while the units, each with its own dedicated IS person, would assume responsibility for workstations and applications. The IS person would become a business-area expert.

However, the agency, which provides electricity and oversees conservation of the lower Colorado River, has had to recentralize its support staff.

"Funding forced us to pull back," says Carol Thomas, manager of end-user computing. "Instead of providing proactive, over-the-top-of-the-cubicle support, we're waiting until something goes wrong and someone calls the help desk."

Consequently, Thomas created a help desk staff that possesses technical finesse. But more importantly, it's steeped in phone support experience.

"They must have the intuition to ask, 'Have you changed anything on your PC lately?' or 'What happened last time you did this?' They must have a fifth sense that will prompt them to ask users the right questions," Thomas says.

Thomas recently added another permanent position in anticipation of new Sybase, Inc. applications and a Unix-based geographical information system that is expected this fall. She chose a candidate who is getting a master's degree in applied geography and had OS/2, Unix and Windows skills as well as experience working directly for an end-user department.

With an eye on being as proactive as possible among the authority's 1,200 users, Thomas has offered free training to low-level departmental employees who want to take on basic user support responsibilities; has maintained a fifth help desk position that rotates among the desk and various end-user sites; has designated a customer service team leader; and has employed three full-time end-user trainers.

In the face of limited support funding, Thomas retains a minimum service level: "If we can't fix it in 30 minutes, we outsource it to an on-site service provider."

University of S.C.'s creativity

With a core IS staff of 12 serving thousands of students, faculty and staff, the University of South Carolina employs the same staff members to handle support, training, applications development and systems administration.

In fact, the support staff relies heavily on creativity and self-motivation to develop flexible, ad hoc support measures. "We've all been here a long time, so we have our own specialties," says Eddie King, a network engineer at the College of Humanities and Social Sciences. "We cross over into other technologies."

For example, King's official responsibility is to manage the network, but he also supports OS/2 and Macintosh applications. Similarly, the mainframe database administrator has become the multimedia application expert and the electronic-mail postmaster is charged with sta-

University of South Carolina

Columbia, S.C.
Eddie King, network engineer, College of Humanities and Social Sciences

Environment: MS-DOS/Windows workstations; Unix workstations and servers; X Windows terminals; Apple Macintoshes; OS/2 workstations; Novell NetWare servers; VAXs; various scientific/engineering platforms

Staffing strategy: Use departmental specialists and interns to stretch resources

tistical applications. "All of our staff are available for support," King says, "but we have other things going on, so we can't just answer everyone's questions at a moment's notice."

To wit, the staff requires larger aca-

demic departments to employ a local support liaison and relies on a help desk staffed by work-study students and interns to field questions.

Help desk staffers, known as student consultants, "learn by fire hose," King notes, but usually come on board with a good background in productivity applications. Each person uses an OS/2 workstation to access remote workstations running OS/2, DOS/Windows or Unix.

The biggest challenge in a mixed environment is knowing where one system ends and another begins. "Because of the multiple personality of their OS/2 workstations, sometimes it's difficult for an inexperienced support person to identify which platform the problem exists on," King says.

And while technical specialties are essential, more important are "troubleshooting, logical thinking and a great deal of curiosity," King says. "The environment changes so rapidly that we often can't deal with support issues on a formal level. In such a dynamic environment, the ability to extrapolate from what you've done in the past is more important than what you've actually done." ∎

Goff is a free-lance writer in New York.

PROGRAMMER ANALYST (Ref: 82194) to consult with clients to ascertain & define their business requirements or problem areas & utilize technical expertise to provide solutions to clients' needs, analyze, design, develop & implement computer software for clients' EDP systems; analyze, design, develop, test & implement an integrated welfare system; process flow, dataflow design, data modelling, database design, application prototyping, structure charts, technical support and meet users to gather requirements using IBM MVS/9000 mainframe under MVS/ESA operating system involving requirement analysis, systems design, process flow & dataflow design, data modelling, database design, screen design, prototyping and report writing using CICS, DB2, TELON, JCL, CLIST, VSAM, QMF, REXX, TSO/E, ISPF/PDF, SDF II, FILE-AID, VS COBOL II, INTERTEST, COBTEST, CEDF, CSP, CASE tool ADW; Reqs. Bach. in Comp. Sci., Comp., Electrical or Electronic Engineering, Systems Analysis or its equiv. & 2 yrs. exp. in job offered or 2 yrs. related exp. as a Programmer, Systems Programmer, Programmer/Analyst, Systems Analyst, Software Engineer, Graduate Engineer Trainee, Apprentice Engineer or Consultant. Will accept 3 yrs. college ed. plus 3 yrs. exp. in job offered or related occup. in lieu of req'd ed. & exp. Related exp. must include, in whole or part, design, develop, test & implement applications on IBM ES/9000 under MVS/ESA using CICS, DB2, TELON, REXX, VS COBOL II, JCL, CLIST, VSAM, SDF II, CSP, TSO/E & ISPF/PDF, FILE-AID, QMF, INTERTEST, COBTEST, CEDF, CASE tool ADW; $38,112/yr. 40 hr/wk., 8:30a5p.

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PROGRAMMER ANALYST (Ref: 67694) to consult with clients to ascertain & define their business requirements or problem areas & utilize technical expertise to provide solutions to clients' needs, analyze, design, develop & implement computer software for clients' EDP systems; analyze, design & develop an integrated Predelivery Information Control System; process flow and data flow design, data modeling identification, technical support and overall design of the system, meet with users to gather requirement designing application in IBM mainframe environment using IBM 3090, MVS/XA, IMS DB/DC, DB2, TSO, REXX, CLIST, & COBOL; Reqs. Bach. in Comp. Sci., Comp., Electrical or Electronic Engineering, Systems Analysis or its equiv. & 2 yrs. exp. in job offered or 2 yrs. related exp. as a Programmer, Systems Programmer, Programmer/Analyst, Systems Analyst, Software Engineer, Consultant, Systems Engineer, Systems Specialist or Area Systems Manager. Will accept 3 yrs. college ed. plus 3 yrs. exp. in job offered or related occup. in lieu of req'd ed. & exp. Related exp. must include, in whole or part, design and development on IBM 3090 under MVS operating system using COBOL, DB2, IMS DB/DC; & include, in whole or in part, using CLIST; $45,000/yr. 40 hr/wk., 8:30a-5p.

SYSTEMS ANALYST (Ref: 73594) to consult with clients to ascertain & define their business requirements or problem areas & utilize technical expertise to provide solutions to clients' needs, analyze, design, develop & implement computer software for clients' EDP systems; leading System Analyst for analysis, design & development of an integrated insurance system; gather, analyze & process flow design, database design & implementation using IBM ES/9000 under MVS operating system with CICS, DB2, VSAM, CSP, REXX, CLIST, JES2, QMF, SDF II, SQL, EASYTRIEVE & VS COBOL II, Platinum, WITT, COBTEST, File-Aid, ADW or Design/1 Case-tools; Reqs. Bach. in Comp. Sci., Comp., Electrical or Electronic Engineering, Systems Analysis or its equiv. & 1 yr. exp. in job offered or 1 yr. related exp. as a Programmer, Systems Programmer, Programmer/Analyst, Systems Analyst, Software Engineer Consultant or Developer. Will accept 3 yrs. college ed. plus 3 yrs. exp. in job offered or related occup. in lieu of req'd ed. & exp. Related exp. must include, in whole or part, working on IBM ES/9000 under MVS/ESA operating system using CICS, DB2, VSAM, REXX, CLIST, JES2, SDF II, FILE-AID, COBTEST, CSP, VS COBOL II; design, test & implementation of payroll & personnel management system using CASE tools DESIGN/1 & develop batch modules on ADW Workstations; $40,000/yr. 40 hr/wk., 8:30a-5p.

PROGRAMMER ANALYST (Ref: 87594) to consult with clients to ascertain & define their business requirements or problem areas & utilize technical expertise to provide solutions to clients' needs; analyze, design, develop, test & implement computer software for clients' EDP systems; lead analyst for analysis, design & development of an integrated welfare system; process flow design, technical support & database & application design of Client Registration part of the system; meet with users to gather requirements; technical support for design of application using IMS DB/DC on IBM 3090 using IBM 3090, MVS/ESA, IMS DB/DC, TELON & MSWORD for PCs used for system design, TSO, REXX, & CLIST; IMS database administration; Reqs. Bach. in Comp. Sci., Comp., Electrical or Electronic Engineering, Systems Analysis or its equiv. & 2 yrs. exp. in job offered or 2 yrs. related exp. as a Programmer, Systems Programmer, Programmer/Analyst, Systems Analyst, Software Engineer, or Consultant. Will accept 3 yrs. college ed. plus 3 yrs. exp. in job offered or related occup. in lieu of req'd ed. & exp. Related exp. must include, in whole or part, analysis, design, development & implementation of application systems on IBM 3090 & using MVS/ESA, IMS DB/DC, TELON, TSO/ISPF, REXX, CLIST; also IMS database administration; $46,128/yr. 40 hr/wk., 8:30a-5p.

PROGRAMMER ANALYST (Ref: 82594) to consult with clients to ascertain & define their business requirements or problem areas & utilize technical expertise to provide solutions to clients' needs, analyze, design, develop & implement computer software for clients' EDP systems; analyze, design & develop a Mortgage Insurance Systems; process flow & data flow design, technical support & overall design of applications; meet with users to gather requirements, provide systems support for the user; technical support for design of applications using IBM 3090, MVS/XA, IDMS, CICS, VSAM, COBOL, KBMS (Knowledge Base Management System) used in artificial intelligence database development; Reqs. Bach. in Comp. Sci., Comp. Engineering, Electrical Engineering, Electronic Engineering, Systems Analysis or its equiv. & 18 mos. in job offered or 18 mos. related exp. as a Programmer, Systems Programmer, Programmer/Analyst, Systems Analyst, Software Engineer, Consultant, Senior Systems Analyst or Software Consultant. Will accept 3 yrs. college ed. plus 3 yrs. exp. in job offered or related occup. in lieu of req'd ed. & exp. Related exp. must include, in whole or part, systems analysis, design, development & testing using IBM 3090, MVS/XA, IDMS, VSAM & CICS; $48,000/yr. 40 hr/wk., 8:30a-5p.

PROGRAMMER ANALYST (Ref: 73094) to consult with clients to ascertain & define their business requirements or problem areas & utilize technical expertise to provide solutions to clients' needs; analyze, design, develop & implement computer software for clients' EDP systems; design & develop financial systems using client-server Open System environment with SYBASE, Unix and ESQL/C; develop detailed technical design, development of the programs; create test plans & implementation. The environment comprises Sybase and associated tools (T/SQL, APT, & ESQL, Open Client, db library); C, Unix and third party reporting tools running on DEC-5100 and GUI using MS-Windows C/SDK; Reqs. Bach. in Comp. Sci., Engineering, Systems Analysis, Mathematics or its equiv. & 2 yrs. exp. in job offered or 2 yrs. related exp. as a Programmer, Systems Programmer, Programmer/Analyst, Systems Analyst, Software Engineer or Consultant. Will accept 3 yrs. college ed. plus 3 yrs. exp. in job offered or related occup. in lieu of req'd ed. & exp. Related exp. must include, in whole or part, design & development of programs on DEC-5100 using Windows SDK & UNIX; also using Sybase, T/SQL, APT, ESQL, Open Client, db library; $43,100/yr. 40 hr/wk., 8:30a-5p.

PROGRAMMER ANALYST (Ref: 87694) to consult with clients to ascertain & define their business requirements or problem areas & utilize technical expertise to provide solutions to clients' needs, analyze, design, develop & implement computer software for clients' EDP systems; analyze, design, develop, test & implement an integrated welfare system in IBM ES/9000 mainframe environment; process flow, dataflow design, data modeling, database design, application prototyping, structure charts, technical support & meet with users to gather requirements, using IBM ES/9000 mainframe under MVS/ESA operating system & requirement analysis, system design, process flow & dataflow design, data modelling, database design, screen design, prototyping and report writing using CICS, DB2, Telon, REXX, JCL, CLIST, VSAM, QMF, TSO/E, ISPF/PDF, SDF II, FILE-AID, VS COBOL II, INTERTEST, COBTEST, CEDF, CSP & CASE tool ADW; Reqs. Bach. in Comp. Sci., Comp., Electrical or Electronic Engineering, Systems Analysis or its equiv. & 1 yr. exp. in job offered or 1 yr. related exp. as a Programmer, Systems Programmer, Programmer/Analyst, Systems Analyst, Software Engineer, Consultant or Graduated Engineer Trainee. Will accept 3 yrs. college ed. plus 3 yrs. exp. in job offered or related occup. in lieu of req'd ed. & exp. Related exp. must include, in whole or part, analysis, design, development & implementation of applications on IBM ES/9000 under MVS/ESA using CICS, DB2, Telon, REXX, VS COBOL II, CLIST, JCL, VSAM, TSO/E AND ISPF/PDF; also using ADW, COBTEST, INTERTEST, QMF, & CEDF, SDF II, FILE-AID & CSP; $37,080/yr. 40 hr/wk., 8:30a-5p.

PROGRAMMER ANALYST (Ref: 73494) to consult with clients to ascertain & define their business requirements or problem areas & utilize technical expertise to provide solutions to clients' needs; analyze, design, develop & implement computer software for clients' EDP systems; consult with clients to ascertain & define the business requirements or problem areas & utilize technical expertise to provide solutions to client's needs, including analyzing, designing, developing and implementing database for the clients automated test data collecting system models, database administration, system testing, administering Unix servers; work on HP 9000 HP server, HP 9000 series workstation, Sun Sparc server 630 MP, Sun Sparc II workstation, DOS platforms, utilizing Power Builder 3.0, Oracle 6.0, Oracle 7.0, SQL Forms 3.0, SQL Menus 5.0, SQL ReportWriter 2.3, SQL Net, C, & Unix shell programming; Reqs. Bach. in Comp. Sci., Comp., Electrical or Electronic Engineering, Systems Analysis or its equiv. & 1 yr. exp. in job offered or 1 yr. related exp. as a Programmer, Systems Programmer, Programmer/Analyst, Systems Analyst, Software Engineer, Consultant, or Research Graduate Research Assistant. Will accept 3 yrs. college ed. plus 3 yrs. exp. in job offered or related occup. in lieu of req'd ed. & exp. Related exp. must include, in whole or part, using SUN workstations, DOS platform, Oracle 6.0; $42,000/yr. 40 hr/wk., 8:30a-5p.

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Programmer Analyst - Analyze, design, develop, test and implement UNIX based financial and Personnel Info. systems using ORACLE V.6, SQL*Plus, SQL*Forms V.3, SQL*Menu, SQL*Loader and Pro*C language. Define database structure and prepare program specs. Assist in performing Systems Admin. and Database Admin. 40 hrs/wk.; M-F, 9AM-5PM; $60,000/yr. Req. Bach in Comp. Sci. or Math and 2 yrs. exp. Employer Paid Ad. Send resumes to 7310 Woodward Avenue, Room 415, Detroit, Michigan 48202 Reference No. 90894.

Software Engineer: Design, develop, implement and maintain data acquisition and data communications application for Service Bay Diagnostic System (SBDS) using Microsoft C on DOS operating system. Design, develop, implement and maintain graphical user interface for SBDS using a presentation manager on OS-2 operating system. Design, implement software communication protocol for interface data acquisition communication programs and graphical user interface. Design, develop and maintain object oriented database applications to identify a vehicle with respect to calibration tools. Design, implement and maintain FLASH EEPROM applications used to download calibration data files into the powertrain control module. Provide technical leadership to subordinate engineers on projects. M.S. in Computer Science. Must also have graduate level classes in: Digital Signal Processing, Computer Operating Systems, Probability Methods and Data Analysis. Graduate or Bachelor level classes in: Electronic Systems Analysis, Active Filter Synthesis and Technical Report Writing. Minimum three (3) months experience as a software engineer. Salary $39,250.00/yr. based upon 40 hour work week. Hours: 8:00 a.m. to 5:00 p.m. Send Resumes to: 7310 Woodward Ave., Rm. 415, Detroit, Michigan 48202. Reference No: 45294. "Employer Paid Ad".

Systems Analyst II to facilitate the implementation of MIS solutions through programming & analytic review of various business functions; provide joint-application development meetings with end-user specialists to assist in meeting informational needs to assist in training end-users in the use of computer equipment; review & provide system analysis for MIS support projects to operate on a UNIX operating system; develop, test & release programming solutions within defined time frames which will include developing graphical user interfaces in a Windows environment & relational database design; install & configure hardware peripherals when needed; provide end-user training on computer hardware & software; Reqs. Bachelor's in Computer Sci. or Information Sys., 4 mos. exp. in job offered or 4 mos. related exp. as a Graduate Assist. Related exp. must include developing spreadsheet based system to track & report departmental spending; network systems administration including programming using network protocols, Unix O.S. & relational database design & must have 1 grad. level course each in Systems Analysis & Design, Database Management Systems, and Expert Systems in Business; $29,763/yr., 37 hrs/wk. 8:30a-5p. Send resume to 7310 Woodward Ave., Room 415, Detroit, MI 48202. Ref. #15294 "Employer Paid Ad"

CONSULTANT-Design, develop, test and debug the diagnostic system for the Engine Control Module (ECM) in a real time mode. Consult and discuss with customer to ascertain and define their requirements and utilize technical expertise in order to meet their needs. Responsibilities include developing Vehicle Communication Custom Control (VCC) in the form of Dynamic Link Library (DLL), communicate PC with Engine System Tester using RS232C link; acquire and process real time data, communicate modules using Dynamic Data Exchange (DDE) technique and develop user interaction, that takes care of every event caused by the user. Also customise the existing code and improve the performance in terms of speed and complexity to support the new real time operations. The system is developed on MSDOS using Visual C++, MSWindows 3.1, SMEDLY, GUIED, BTRIEVE 5.1. Req'd: M.S. in Computer Science and Engineering with 1 year exp. in a job offered or 1 year exp. in a related occupation such as Software Engineer. Experience in developing, testing and debugging a real time diagnostic software. Also experience in the use of hardware and software, including instrumentation and data acquisition systems, C, PL/M, Assembly (Intel Micrprocessor). Profiency in Graphical User Interface and Multitasking. Graduate level courses one each in: Real Time Microprocessor Based Systems, Communications, Graphics and Descrete Mathematics. 40 hrs/wk. 8:00 am.- 5:00 pm. $40,000.00/yr. Send resumes to: 7310 Woodward Ave., Rm 415, Detroit, MI 48202, Ref.# 70594. "Employer Paid Ad".

DIRECTOR OF AUTOMATED LIBRARY SERVICES

of the Upper Peninsula Region of Library Cooperation, Inc., a consortia of 22 multi-type libraries on a NOTIS system.

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Administrative Duties: leadership for the ALS Council and supervision of Project staff.

Qualifications Required: BA or BS in Information Systems or related field, two or more years experience in management, administration or related experience; computer system/network management skills and knowledge of telecommunications; ability to exercise independent judgement within the scope of the job description; strong leadership skills; strong organizational skills, effective communication skills; and a valid drivers license.

Qualifications Desired: Masters Degree and experience in Library automation systems.

Minimum Salary $30,000. Please send letter of application, resume and names of three references by September 30, 1994, to UPRLC-ALS Personnel Committee, 1615 Presque Isle Ave., Marquette, MI 49855-2811.

PROGRAMMER/ANALYST:

Duties: Plans, develops, tests, and documents computer programs, applying knowledge of programming techniques and computer systems. Evaluates user requests for new or modified program. Consults with user to identify current operating procedures and clarifying program objectives. Formulates plan outlining steps required to develop program, using structured analysis and design. Designs computer terminal screen displays to accomplish goals of user requests. Must have a Bachelor's of Computer Science (will accept in lieu thereof a Master's of Science in Computer Science). Must have 2 years experience as a programmer/analyst. Must have 18 months' experience with Paradox PAL and 18 months' experience with X-based programming languages (experience may be concurrent). Must have completed a course in Advanced DBMS and Advanced Operating Systems. M-F; 40 hrs/wk.; 8:00 a.m. - 4:30 p.m. $36,000/yr. Send resume to: 7310 Woodward Avenue, Room 415, Detroit, Michigan 48202. Reference Number 59094. Employer paid ad.

Systems Engineer to analyze & define user requirements, design, code, test, implement & document automated information processing systems using client-server & A.I. based computing techniques for engineering community utilizing C & C++ programming languages & ORACLE database methodology on SUN/HP workstation/IBM & DEC VAX/VMS hardware platforms, as well as using X-Windows/Motif, TCP/IP, LEX/YACC; Reqs: Bach. in Comp. Engg., 1 yr. exp. in job offered or 1 yr. related exp. as Systems Engineer &/or Teaching Assist. 10 mos. related exp. must include design, development, testing, documenting & implementing applications on DEC workstation running VAX/VMS O.S. using C language & using RDB/SQL/X-Window programming; 4 mos. related exp. must include using HP/Sun Sparc workstation running UNIX; 6 mos. exp. or thesis research in area of artificial intelligence, associative supercomputing using C, C++, X-Windows/Motif, TCP/IP, LEX/YACC. Must have 1 univ. course each in: Compiler Design, Database Management Systems, & Computer Architecture; $46,000/yr, 8:00 a.m. 8:30a-5p. Send resume to 7310 Woodward Ave., Room 415, Detroit, MI 48202. Ref. #59394 "Employer Paid Ad"

Programmer/Analyst: Design, analyze, and implement changes to software which are used to support and develop an electronic trading systems automated data input card to be used by individuals who are engaged in the business of financial and commodity trading in a worldwide board of trade network. Will use C and C++ programming in conjunction with 8086 assembly language to modify software. Will enhance software products by using Object-Oriented Programming in conjunction with data bases programmed in C to allow use of a pen mouse driver in a Windows-based operating system. Will perform appropriate systems programming for control systems. Requires Master's degree in Computer Science. Also requires six months experience in the job to be performed or six months experience as a Systems Programmer, Control Systems. If experience in related field, entire experience must include use of C programming in conjunction with 8086 assembly language to modify software. Education to include completion of one course in each of the following: Object-Oriented Programming; Data Structures; Microprocessors and Microprogramming; and, Computer Graphics using C++. Evaluate training in computer use and applications; and works with students in computer laboratory. Hours: 9:00 a.m. -5:00 p.m. 40 hours per week at $35,100.00 per year salary. Must have proof of legal authority to work permanently in the U.S. Please send two copies of resume to: Illinois Department of Employment Security, 401 S. State St. -3 South, Chicago, IL 60605, ATTN: Joan Sykstus, Ref. #V-IL 8957-S, No Calls, An Employer Paid Ad.

Project Leader required to define, design, develop, program, test, implement and maintain efficient, economical, business computer and noncomputer systems and information services. Individually or as part of a team analyze requests for new computer systems and corporate problem areas; study new computer development and revise existing system. Analyze and evaluate computer applications to recommend a design or solution to fill user needs. Perform all aspects of programming, conduct training sessions and prepare complete user documentation manuals. Maintain an awareness of new systems and programming technologies. Contact with user departments and outside hardware vendors - consultant firms. Develop data acquisition from process monitoring systems so as to provide any station in a production line with the current status of production from any other station in the line. Requires experience with PLC's, DEC, VAX/VMS and VAX/ULTRIX equipment and applications; wide area networks and WANmanager; and Oracles database and Oracles SQL-Loader. Requires Bachelor's degree in Computer Science and 4 years experience as project leader or analyst/programmer. 40 hrs/wk, 8a-5p, salary $52,400. Must have proof of legal authority to work in the U.S. Send resume to 7310 Woodward Ave., Room 415, Detroit, Michigan 48202. Reference No. 78294. Employer paid ad.

SYSTEMS MANAGER - COMMERCIAL:

Responsible for managing and coordinating the company's data processing and management consulting projects. Will act as liaison between clients and development teams. Will work with technical (hardware and software) as well as business aspects of consulting projects. Responsible for reporting cost and time estimates to the company's officers and overseeing project teams to ensure that projects are completed within budgeted cost and time guidelines. Will market for new business as well as submitting bids to new and existing clients. Bachelor's degree (or equivalent) in Electrical/Electronic/Computer Engineering or M.B.A. (or equivalent). Must have 3 years in the job offered or 3 years in Information Systems Development. Will accept five years Information Systems Development in lieu of the M.B.A. and 3 years experience in System Development. Must have at least 3 of the 3 or the 5 years using the ORACLE RDBMS and tools. Must be willing to travel and relocate frequently. $42,500 per year, 40 hours per week, 8:00 a.m. to 5:00 p.m. Contact LA Office of Employment Security, Job Order 685671, 617 St. Charles Avenue, New Orleans, LA 70130, Room 211X. Must have proof of legal authority to work in the United States.

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through Friday; 8:00 a.m. to 5:00 p.m.; 40 hours per week; $32,880 annually with approximately 5 hours per week overtime at $23.71 per hour; Required is a Bachelor of Science degree in Computer Science with an emphasis in telecommunications. As part of the required education, the applicant must have taken one (1) course in each of: Telecommunications Systems Design & Management, ISDN (Integrated Service Digital Network), and LANS (Local Area Networks). Applicant must have one (1) year of experience in the position being offered or one (1) year of experience in the related occupation of Telecommunications Network Coordinator; As part of the required experience in the position being offered or in the related occupation, the applicant must have had experience working with SNA/SDLC, Modems, Multiplexors, UNIX operating systems, PC based network hardware and software applications, network diagnostic equipment, network management systems, and LAN/WAN communications fundamentals. Applies principles of telecommunications engineering to fulfill and support network operations for the company's Corporate Data Center. Ensures that network components are operational and functioning. Analyzes and determines data communication problems and assists system users and operators in the resolution of technical issues. Tests and evaluates hardware and software to determine system efficiency and reliability and maintains records of system and equipment failures in order to recommend and implement corrective action and to develop preventative maintenance plans with vendors. Coordinates the activities of equipment and line vendors and monitors system network services to ensure availability for all system users. Troubleshoots IT, LANS, and cables with the help of data scopes, LAN sniffers, and cable testers. Carries out protocol analysis for the SNA, Bisync, Async, HDLC, TCP/IP and NETBEUI. Writes technical documentation and creates CAD layouts. Interested applicants submit two (2) resumes to: Alien Labor Unit, c/o: Robert Osterkil, 201 E. Washington Avenue, Room 211X, Madison, Wisconsin 53702, Case # 940188. AN EMPLOYER PAID AD.

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Chargeback not ready for client/server

Currently, there are no robust chargeback tools for the distributed computing world. Existing programs lack the ability to track client/server's biggest expense – personnel.

By Paul Karon

While many powerful applications have made the transition to distributed platforms, chargeback systems critical to cost-tracking for the mainframe environment have been slow to migrate.

Why? It's a matter of simple economics. The less expensive the hardware processing power, the less critical it is to track the percentages of resources going to each user. That's one reason distributed solutions are installed in the first place. They're cheaper.

Cost displacement

But just because the hardware is cheaper doesn't mean distributed computing is cheaper. The costs simply show up in other places. "When [information systems] departments are making the transition from mainframes to distributed architectures, they don't realize that managing these environments is three to six times more expensive than in a centralized mainframe environment," says Bradley Hecht, a research analyst at Gartner Group, Inc. in Stamford, Conn.

Unlike in client/server, usage-based chargeback works well in traditional data centers where the lion's share of costs go toward expensive mainframe hardware and software. "The labor involved in client/server systems is what really runs up the bill, but IS people are not well equipped to capture these costs," says Jim House, senior editor of the newsletters "Client/Server" and "Open Systems" at Computer Economics, Inc., a research and consulting firm in Carlsbad, Calif.

Slow ride

In fact, IS managers who have moved to client/server have found no easy technological fix for the human factor of support costs. "In distributed environments, hidden costs such as customizing software, script writing, retraining and configuring systems account for something like 75% to 80% of the cost of implementation," Hecht says.

House estimates those costs to be slightly lower, at around 60%, but that's still a long way from mainframe systems.

Nevertheless, chargeback is slowly entering distributed computing, and it's the larger shops that are more likely to realize savings. "If you spend $25,000 to $30,000 on a piece of hardware, you're not going to spend $5,000 on chargeback software," says Ken Leoni, director of sales at Computer Information Systems, Inc., a chargeback software vendor in Newton, Mass.

For medium and small installations as well as big-ticket shops, chargeback software is most useful as a resource planning tool. It shows where IS capacity is challenged and where resources should be expanded, Leoni says.

Long way off

The problem with most chargeback packages for distributed systems is that they target particular proprietary environments, such as VMS, Hewlett-Packard Co.'s HP/UX or IBM's AIX. For highly mixed environments, the current tools just aren't comprehensive enough.

Primary elements monitored are disk space usage, CPU runtime and print queuing. Others might include I/O to disk, memory usage, batch vs. interactive usage and comparative rates for the times of day the system is used.

If you want a single package that not only keeps track of basic usage factors but also measures demand on individual applications running on the servers, don't hold your breath. Chargeback packages provide system-level information but typically cannot see into individual applications to measure, for example, the extent to which users query a corporate database. That kind of information must be provided in concert with application software.

"No matter what vendors claim, there are no real robust tools today to do chargeback in the distributed computing world," Hecht says. "Users want to get granular information, right down to the node. That's ideal, but we're a long way from that." ∎

Karon is a free-lance writer in Los Angeles.

> **❝There are no chargeback tools comprehensive enough for what users are asking for. They want to get granular information, right down to the node. That's ideal, but we're a long way from that.❞**
>
> Bradley Hecht, research analyst
> Gartner Group, Inc., Stamford, Conn.

Billing Alternative

One of the more talked-about solutions to the chargeback problem in distributed environments is decidedly "no-tech."

Often referred to as the "cable TV model," it's a method whereby IS departments create tiered pricing structures for equipment and services. By including support in the chargeback fees, this method reflects an IS department's real costs more accurately than a strict, machine-based chargeback system that looks only at CPU cycles and disk space.

Under the cable TV approach, users can choose support plans that bundle together different allocations of service and equipment into two or three tiers. A standard-level service tier may include workstation installation and network connection along with basic training and support. A more expensive premium tier may add advanced levels of training and support and custom application development.

In fact, this approach may become more important than simple chargeback metrics. "None of this [chargeback] stuff is really rocket-science code," says Chuck Stern, director of sales at Unison Software, Inc. in Sunnyvale, Calif. "The challenge is in the [companies'] trying to get their arms around how they want to charge and bill for this."

– Paul Karon

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Companies in this issue

Page number refers to page on which story begins

Gainers

Percent

CRAY COMPUTER	28.9
BACHMAN INFO. SYSTEMS	26.7
PROTEON INC.	19.0
XYLOGICS INC.	18.2
BROCK CONTROL SYSTEMS INC.	17.1
XILINX	17.1
CENTIGRAM COMMUNICATIONS	14.6
AUTODESK INC.	14.0

Dollar

AUTODESK INC.	7.13
3 COM CORP.	6.75
XILINX	6.50
HEWLETT PACKARD CO.	6.00
STRATACOM INC.	4.25
IBM (H)	3.88
WALL DATA INC.	3.75
INTEL CORP.	3.25

Losers

Percent

NETRIX CORP.	-20.0
COMPUSA INC.	-14.9
INTELLIGENT INFO. SYSTEMS	-14.7
GUPTA	-13.3
PHOENIX TECHNOLOGIES	-12.1
MICRO FOCUS	-12.0
SAPIENS INTL. CORP. N.V.	-10.7
ROSS SYSTEMS	-10.0

Dollar

MICRO FOCUS	-1.88
BELLSOUTH CORP.	-1.88
BELL ATLANTIC CORP.	-1.75
ALDUS CORP.	-1.75
GTE CORP.	-1.63
CREATIVE TECHNOLOGIES INC.	-1.63
ITT CORP.	-1.63
GUPTA	-1.63

Industry Almanac

Semiconductor market share

You've read about the U.S. and Japanese fight for worldwide semiconductor market share and the summer drop in U.S. book-to-bill ratio. And you might even be concerned that **Intel Corp.** (INTC) is going to get trounced by the PowerPC.

What's an investor to do?

Hold on to your shares or buy, said Daniel Klesken, an analyst at Robertson Stephens & Co. in San Francisco. The U.S. semiconductor market, including Intel, is doing fine.

"People worry too much about the book-to-bill ratio," Klesken said. "It has always been cyclical. As long as both numbers are over 1, the industry is healthy."

U.S. companies' knack for business and appreciation for customers are their real strengths. "The Japanese are starting to model themselves after American companies. But they did themselves in by trying to obtain market share at any cost," Klesken said.

Paul Plansky, vice president at HTE Research, Inc. in southern San Francisco and editor in chief of the "Semiconductor Industry & Business Survey," agreed that growth is certain. "Networking, telecommunications and consumer electronics are all huge growth segments," Plansky said.

Despite PowerPC hype, there is more to this market. "PCs represent only 25% of all chip sales," Plansky said. "That leaves 75% of a market and a whole lot of products."

Still, if investors need reassurance about Intel, it isn't hard to find. "The Pentium is selling for 40% less than the 486 did four years ago, and Intel's cost is continually declining. Plus, they'll be shipping 30 to 40 times more Pentiums than 486s so they're going to accrue at least that in revenue," Klesken said.

In the end, Intel is a veteran in a market that is churning up lots of opportunities. "They are making deals with all the right people," Plansky said. "No matter what horse gets up and running, Intel will be on it."

— Erin Callaway

Chips on parade

Robertson, Stephens & Co. ratings for semiconductor manufacturers

COMPANY	SHARE PRICE AUG. 18	RECOMMENDATION
Altera Corp.	28⅞	Buy
Cirrus Logic, Inc.	31⅛	Buy
Cypress Semiconductor Corp.	18⅝	Buy
Dallas Semiconductor Corp.	15⅞	Buy
Intel Corp.	63²³⁄₆₄	Strong buy
Level One Communications	19¾	Buy
Zilog, Inc.	31½	Buy

Communications and Network Services — UP 2.69%

EXCH	52-WEEK RANGE		NAME	AUG. 19 3 PM	WK NET CHANGE	WK PCT CHANGE
OTC	63.75	23.25	3 COM CORP.	59.50	6.75	12.8
NYS	45.56	36.25	AMERITECH CORP.	41.50	-0.88	-2.1
NYS	63.38	49.50	AT&T	53.25	-0.38	-0.7
OTC	26.50	12.75	BANYAN SYSTEMS INC.	16.75	1.63	10.7
NYS	69.13	49.00	BELL ATLANTIC CORP.	55.50	-1.75	-3.1
NYS	63.88	53.00	BELLSOUTH CORP.	60.88	-1.88	-3.0
NYS	21.50	8.38	BOLT, BERANEK & NEWMAN	14.13	-0.38	-2.6
OTC	15.75	9.00	BROOKTROUT TECHNOLOGY	10.50	0.00	0.0
NYS	132.50	82.63	CABLETRON SYSTEMS	104.63	2.13	2.1
OTC	43.00	10.00	CENTIGRAM COMMUNICATIONS	14.75	1.88	14.6
OTC	75.25	31.50	CHIPCOM CORP.	50.00	-1.50	-2.9
OTC	40.75	18.75	CISCO SYSTEMS INC.	22.88	1.38	6.4
OTC	18.38	9.25	COMPRESSION LABS INC.	11.63	0.38	3.3
OTC	12.38	5.13	COMPUTER NETWORK TECH.	6.63	-0.13	-1.9
OTC	33.75	8.50	CROSSCOMM	17.38	0.25	2.6
OTC	3.00	1.50	DATA SWITCH CORP.	2.38	0.25	11.8
OTC	36.56	17.88	DSC COMMUNICATIONS	24.88	1.25	5.3
NYS	19.25	8.25	GENERAL DATACOMM INDS. (H)	19.13	0.63	3.4
NYS	39.88	29.50	GTE CORP.	31.38	-1.63	-4.9
NYS	95.97	78.63	ITT CORP.	83.38	-1.63	-1.9
OTC	29.63	21.38	MCI COMMUNICATIONS CORP.	22.75	0.50	2.2
OTC	7.75	1.63	MICROCOM INC.	7.13	0.75	11.8
OTC	23.50	11.25	NETMANAGE INC.	17.38	0.13	0.7
OTC	7.25	3.75	NETRIX CORP.	4.00	-1.00	-20.0
OTC	8.75	3.50	NETWORK COMPUTING DEVICES	3.75	-0.25	-6.3
NYS	12.00	7.38	NETWORK EQUIPMENT TECH.	12.00	1.00	9.1
OTC	23.38	11.50	NETWORK GENERAL	16.75	0.88	5.5
OTC	9.63	6.38	NETWORK SYSTEMS CORP.	9.00	-0.13	-1.4
OTC	73.88	26.50	NETWORK BRIDGE NETWORKS CORP.	32.00	1.00	3.2
NYS	35.13	23.75	NORTHERN TELECOM LTD. (H)	34.63	0.88	2.6
OTC	26.63	14.00	NOVELL INC.	15.25	-0.25	-1.6
NYS	48.88	33.25	NYNEX CORP.	38.63	-0.88	-2.2
OTC	30.00	15.50	OCTEL COMMUNICATIONS CORP.	21.25	-0.25	-1.2
OTC	18.25	9.00	OPTICAL DATA SYSTEMS INC.	16.25	0.25	1.6
OTC	7.50	3.13	PENRIL DATA COMM NETWORKS	3.50	0.00	0.0
OTC	20.75	10.00	PICTURETEL CORP.	15.25	0.25	1.7
OTC	8.25	2.13	PROTEON INC.	3.13	0.50	19.0
NYS	42.50	24.88	RACOTEK INC.	42.50	2.88	7.3
NYS	47.00	36.75	SCIENTIFIC ATLANTA INC. (H)	41.88	-1.25	-2.9
NYS	40.25	31.38	SOUTHWESTERN BELL CORP.	38.13	0.88	2.3
OTC	26.75	13.38	SPRINT CORP.	17.38	0.13	0.7
OTC	37.00	11.50	STANDARD MICROSYSTEMS CORP.	37.00	4.25	13.0
OTC	33.75	13.13	STRATACOM INC.	15.00	1.19	8.6
OTC	15.25	3.88	SYNOPTICS COMMUNICATIONS	4.88	-0.25	-4.9
OTC	46.00	23.00	TELEBIT CORP.	30.75	-0.75	-2.4
NYS	50.75	38.25	US ROBOTICS	40.13	-0.63	-1.5
OTC	43.88	18.75	US WEST INC.	21.88	2.00	10.1
OTC	28.25	12.75	WELLFLEET COMMUNICATIONS	18.00	0.50	2.9
OTC	23.00	13.25	XIRCOM	19.50	3.00	18.2
OTC			XYLOGICS INC.	18.50	2.25	13.8
			XYPLEX INC.			

PCs and Workstations — UP 2.62%

EXCH	52-WEEK RANGE		NAME	AUG. 19 3 PM	WK NET CHANGE	WK PCT CHANGE
OTC	7.50	2.63	ADVANCED LOGIC RESEARCH	4.25	0.25	6.3
OTC	38.50	22.00	APPLE COMPUTER INC.	34.50	-0.25	-0.7
OTC	33.00	12.50	AST RESEARCH INC.	17.00	-0.63	-3.5
NYS	39.88	17.28	COMPAQ COMPUTER CORP.	37.00	2.00	5.7
OTC	34.00	15.13	DELL COMPUTER CORP. (H)	33.88	1.38	4.2
OTC	25.00	9.25	GATEWAY 2000 INC.	15.00	-0.25	-1.6
NYS	93.63	64.38	HEWLETT PACKARD CO.	87.25	6.00	7.4
NYS	26.88	18.00	SILICON GRAPHICS	25.25	0.88	3.6
NYS	31.38	18.25	SUN MICROSYSTEMS INC.	26.00	1.38	5.6
NYS	50.75	29.13	TANDY CORP.	39.88	0.75	1.9
OTC	5.13	2.38	ZEOS INTERNATIONAL LTD.	3.63	0.00	0.0

Large Systems — UP 5.22%

EXCH	52-WEEK RANGE		NAME	AUG. 19 3 PM	WK NET CHANGE	WK PCT CHANGE
ASE	7.88	4.38	AMDAHL CORP.	7.00	0.13	1.8
NYS	7.63	3.75	CONVEX COMPUTER	6.38	0.50	8.5
OTC	4.50	0.50	CRAY COMPUTER	1.53	0.34	28.9
NYS	33.75	19.13	CRAY RESEARCH INC.	21.13	0.38	1.8
NYS	10.75	6.63	DATA GENERAL INC.	8.00	-0.25	-3.0
NYS	43.13	18.25	DIGITAL EQUIPMENT CORP.	22.50	1.25	5.9
OTC	6.38	2.38	ENCORE COMPUTER CORP.	4.06	0.06	1.6
NYS	52.25	39.63	HARRIS CORP.	46.88	2.63	5.9
NYS	67.88	41.25	IBM (H)	67.88	3.88	6.1
OTC	18.75	7.75	NETFRAME	9.25	0.00	0.0
OTC	26.00	3.88	PARALLAN COMPUTER	4.25	0.25	6.3
OTC	23.25	5.38	PYRAMID TECHNOLOGY	8.00	0.38	4.9
OTC	20.00	11.13	SEQUENT COMPUTER SYS.	16.75	-0.25	-1.5
OTC	15.25	11.50	SEQUOIA SYSTEMS INC.	4.88	0.31	6.8
NYS	38.00	22.88	STRATUS COMPUTER INC. (H)	38.00	2.25	6.3
NYS	16.38	8.50	TANDEM COMPUTERS INC.	15.13	0.75	5.2
OTC	30.00	3.88	TRICORD SYSTEMS	5.63	0.00	0.0
NYS	16.50	8.63	UNISYS CORP.	9.75	0.75	8.3

Software — UP 1.76%

EXCH	52-WEEK RANGE		NAME	AUG. 19 3 PM	WK NET CHANGE	WK PCT CHANGE
OTC	34.50	16.25	ADOBE SYSTEMS INC.	32.38	-1.38	-4.1
OTC	34.50	16.25	ALDUS CORP.	14.75	-1.75	-2.5
OTC	8.38	4.38	AMERICAN SOFTWARE INC.	5.13	0.13	2.5
OTC	15.75	6.75	ASK COMPUTER SYSTEMS	13.00	0.00	0.0
OTC	61.75	37.00	AUTODESK INC.	58.13	7.13	14.0
OTC	4.25	1.75	BACHMAN INFO. SYSTEMS	2.38	0.50	26.7
OTC	31.00	20.50	BGS SYSTEMS INC.	24.25	-1.00	-4.0
OTC	71.00	40.50	BMC SOFTWARE INC.	50.63	0.00	0.0
OTC	30.75	22.50	BOOLE & BABBAGE	27.75	0.63	2.3
OTC	20.75	8.50	BORLAND INT'L INC.	13.88	0.38	2.8
OTC	14.75	7.38	BROCK CONTROL SYSTEMS INC.	10.25	1.50	17.1
OTC	4.63	2.38	CE SOFTWARE	2.94	0.06	2.2
ASE	10.34	6.25	CHEYENNE SOFTWARE INC.	10.88	1.25	13.0
OTC	14.25	7.38	COGNOS INC.	10.94	-0.19	-1.7
NYS	44.88	27.38	COMPUTER ASSOCIATES	39.75	-0.25	-0.6
OTC	5.38	2.13	COMPUTERVISION CORP.	2.75	0.00	0.0
OTC	48.25	21.00	COMPUWARE CORP.	38.63	0.00	0.0
OTC	14.00	7.50	COMSHARE INC.	9.25	-0.13	-1.3
OTC	25.00	11.50	COREL CORP.	19.38	0.63	3.3
OTC	7.13	3.00	EASEL CORP.	4.13	0.50	13.8
OTC	29.25	12.75	FILENET CORP.	20.75	1.75	9.2
OTC	25.00	3.00	4TH DIMENSION	7.00	-0.13	-1.8
OTC	13.25	7.25	FRAME TECHNOLOGY (H)	11.75	-0.25	-2.1
OTC	12.00	7.00	GROUP I SOFTWARE	8.00	0.00	0.0
OTC	31.75	6.75	GUPTA	10.63	-1.63	-13.3
OTC	12.00	5.88	HOGAN SYSTEMS INC.	7.50	0.25	3.4
OTC	29.50	16.00	IMRS	27.25	1.50	5.8
OTC	44.75	11.50	INFORMATION RESOURCES	13.50	1.50	12.5
OTC	24.50	14.25	INFORMIX CORP.	20.75	-0.63	-2.9
OTC	12.38	8.75	INTERGRAPH CORP.	9.75	-0.25	-2.5
OTC	8.75	2.50	INTERLEAF INC.	3.38	0.00	0.0
OTC	15.50	7.00	INTERSOLV INC.	13.25	1.13	9.3
OTC	50.00	27.00	INTUIT INC.	40.25	0.75	1.9

Semiconductors — UP 1.72%

EXCH	52-WEEK RANGE		NAME	AUG. 19 3 PM	WK NET CHANGE	WK PCT CHANGE
OTC	32.50	16.75	ADVANCED MICRO DEVICES	28.75	0.50	1.8
NYS	31.25	19.38	ANALOG DEVICES INC.	30.50	0.63	2.1
OTC	29.63	10.94	ATMEL CORP.	27.44	1.56	6.0
OTC	7.50	3.63	CHIPS AND TECHNOLOGIES	4.13	0.13	3.1
OTC	44.63	23.88	CIRRUS LOGIC	30.63	0.50	1.7
NYS	19.88	11.25	CYPRESS SEMICONDUCTOR CORP.	19.00	0.63	3.4
NYS	20.13	13.00	DALLAS SEMICONDUCTOR	16.00	0.13	0.8
NYS	28.00	13.00	INTEGRATED SILICON SYSTEMS	22.75	0.75	3.4
OTC	74.50	55.88	INTEL CORP.	63.38	3.25	5.4
NYS	30.25	13.00	LSI LOGIC CORP. (H)	30.25	1.00	3.4
OTC	26.75	12.25	LATTICE SEMICONDUCTOR	19.81	1.19	6.4
NYS	44.25	15.16	MICRON TECHNOLOGY (H)	43.88	1.75	4.2
NYS	54.88	42.13	MOTOROLA INC.	52.88	-0.38	-0.7
NYS	25.00	16.38	NATIONAL SEMICONDUCTOR	18.75	0.25	1.4
OTC	12.13	6.75	SIERRA SEMICONDUCTOR (H)	11.63	0.25	2.2
NYS	89.50	55.75	TEXAS INSTRUMENTS	83.00	-0.13	-0.2
OTC	14.38	3.00	VLSI TECHNOLOGY	9.75	0.69	4.6
OTC	14.38	3.00	WELTEK (L)	3.38	0.25	8.0
ASE	20.38	4.63	WESTERN DIGITAL CORP.	15.88	0.00	0.0
OTC	59.75	29.00	XILINX	44.50	6.50	17.1
	40.75	26.50	ZILOG INC.	31.75	1.25	4.1

Peripherals and Subsystems — UP 0.57%

EXCH	52-WEEK RANGE		NAME	AUG. 19 3 PM	WK NET CHANGE	WK PCT CHANGE
OTC	30.50	14.50	AMERICAN POWER CONVERSION	18.50	1.50	8.8
OTC	24.75	17.25	BANCTEC INC.	22.00	1.25	6.0
OTC	7.75	3.25	CAMBEX CORP.	4.38	0.50	12.9
ASE	7.38	3.88	COGNITRONICS CORP.	2.75	-0.06	-2.2
NYS	20.50	9.00	CONNER PERIPHERALS	13.00	0.25	2.0
OTC	24.25	8.75	CREATIVE TECHNOLOGIES INC.	18.00	-1.63	-8.3
OTC	14.25	3.75	DATA RACE INC.	3.75	-0.25	-6.3
ASE	10.75	4.13	DATARAM CORP.	5.13	0.13	2.5
NYS	23.00	12.38	EMC CORP.	15.88	0.50	3.3
OTC	8.63	3.13	EMULEX CORP. (H)	8.38	0.25	3.1
OTC	21.00	11.75	EVANS & SUTHERLAND	12.50	-0.13	-1.0
OTC	22.50	8.75	EXABYTE	18.75	0.88	4.9
OTC	34.00	2.63	INTELLIGENT INFO. SYSTEMS	3.63	-0.63	-14.7
OTC	4.38	2.00	IOMEGA CORP.	2.44	0.06	2.6
OTC	3.00	1.00	IPL SYSTEMS INC.	3.63	0.00	0.0
OTC	28.50	13.75	MAXOPTIX CORP.	23.38	0.38	1.6
OTC	8.63	6.25	MAXTOR CORP.	5.50	0.63	12.8
OTC	8.75	4.88	MICROPOLIS CORP.	6.63	-0.38	-5.4
OTC	22.50	10.00	PINNACLE MICRO INC.	11.50	-0.75	-6.1
OTC	15.75	6.75	PROCOM TECHNOLOGY INC.	9.38	0.63	7.1
NYS	11.75	6.88	QMS INC.	9.38	0.00	0.0
OTC	20.25	9.38	QUANTUM CORP.	17.00	-0.50	-2.9
OTC	9.13	3.63	RADIUS INC.	4.63	-0.50	-9.8
OTC	17.75	7.00	RECOGNITION INTERNATIONAL (L)	7.00	-0.50	-6.7
OTC	6.88	3.63	REXON INC.	5.13	0.25	5.1
OTC	28.75	16.25	SEAGATE TECHNOLOGY	25.38	-0.25	-1.0
NYS	41.50	23.75	STORAGE TECHNOLOGY	37.00	0.00	0.0
NYS	33.38	21.38	TEKTRONIX INC.	31.63	0.75	2.4
NYS	107.38	69.88	XEROX CORP. (H)	106.75	0.38	0.4

Services — UP 0.34%

EXCH	52-WEEK RANGE		NAME	AUG. 19 3 PM	WK NET CHANGE	WK PCT CHANGE
OTC	27.25	15.13	AMERICAN MGMT. SYSTEMS (H)	26.75	0.31	1.2
NYS	4.25	2.50	ANACOMP INC.	3.13	0.06	2.0
OTC	23.50	14.50	ANALYSTS INT'L	15.00	0.50	3.4
NYS	56.88	47.63	AUTO DATA PROCESSING	53.63	0.63	1.2
OTC	18.25	11.00	CAMBRIDGE TECH. PARTNERS	15.25	0.13	0.8
NYS	27.13	15.00	CERIDIAN CORP.	25.13	0.00	0.0
OTC	24.25	14.25	COMDISCO INC.	20.25	-0.50	-2.4
OTC	12.50	5.91	COMPUTER HORIZONS	9.88	-0.13	-1.3
NYS	45.25	29.13	COMPUTER SCIENCES	41.88	0.63	1.5
NYS	10.00	6.00	COMPUTER TASK GROUP	10.00	-0.13	-1.2
NYS	32.38	7.13	COMPUSA INC.	7.13	-1.25	-14.9
OTC	13.50	6.38	CONTROL DATA SYSTEMS INC.	6.75	-0.13	-1.8
OTC	11.00	6.13	EGGHEAD DISCOUNT SOFTWARE	6.56	0.06	1.0
NYS	38.00	26.50	GENERAL MOTORS E (EDS)	35.38	0.13	0.4
OTC	22.25	7.25	INACOM CORP.	8.50	0.38	4.1
OTC	28.00	13.63	INTELLIGENT ELECTRONICS	16.50	0.75	4.8
OTC	22.50	7.00	MERISEL	9.63	0.25	2.7
OTC	32.50	9.25	MICROAGE INC.	13.13	-0.75	-5.4
OTC	40.50	28.50	PAYCHEX	32.75	-0.13	-0.4
NYS	39.75	22.25	POLICY MANAGEMENT SYS.	34.63	1.13	3.4
NYS	26.00	18.63	REYNOLDS AND REYNOLDS (L)	25.50	-0.13	-0.5
OTC	28.50	17.00	SEI CORP.	21.25	2.50	13.3
OTC	29.38	20.50	SHARED MEDICAL SYSTEMS	24.50	1.13	4.8
OTC	11.00	5.00	SHL SYSTEMHOUSE (L)	5.06	-0.13	-2.4
OTC	26.50	9.25	SOFTWARE SPECTRUM INC.	12.75	-0.50	-3.8
OTC	42.75	31.50	SUNGARD DATA SYSTEMS	34.00	0.00	0.0

Other (right column, top)

EXCH	52-WEEK RANGE		NAME	AUG. 19 3 PM	WK NET CHANGE	WK PCT CHANGE
OTC	18.75	2.25	KNOWLEDGEWARE INC.	7.63	0.31	4.3
OTC	34.75	17.50	LEGENT CORP.	21.50	-1.50	-6.5
OTC	86.50	29.75	LOTUS DEVELOPMENT	42.00	0.00	0.0
OTC	18.00	6.00	MAGIC SOFTWARE ENTERPRISES	8.50	0.00	0.0
OTC	18.50	6.00	MANUGISTICS GROUP INC.	8.50	-0.25	-2.9
OTC	7.50	1.44	MATHSOFT	2.13	-0.13	-5.6
OTC	11.25	4.50	MCAFEE ASSOCIATES	8.75	-0.50	-5.4
OTC	17.25	8.88	MENTOR GRAPHICS	10.75	1.13	11.7
OTC	30.25	11.50	MICRO FOCUS	13.75	-1.88	-12.0
OTC	11.63	4.63	MICROGRAFX INC.	6.00	0.63	11.6
OTC	56.00	35.63	MICROSOFT CORP. (H)	54.94	-0.31	-0.6
OTC	40.75	22.88	ORACLE CORP.	40.75	2.38	6.2
OTC	44.75	21.50	PARAMETRIC TECHNOLOGY	27.75	0.50	1.8
OTC	24.50	13.38	PARCPLACE SYSTEMS INC.	18.75	1.00	5.6
OTC	45.00	26.00	PEOPLESOFT (H)	44.38	2.13	5.0
OTC	6.25	3.50	PHOENIX TECHNOLOGIES	5.00	-0.69	-12.1
OTC	69.50	24.25	POWERSOFT	43.50	-0.25	-0.6
OTC	39.75	3.50	PLATINUM SOFTWARE	6.50	0.00	0.0
OTC	17.00	7.25	PLATINUM TECHNOLOGY (H)	16.38	0.13	0.8
OTC	60.25	27.00	PROGRESS SOFTWARE CORP.	34.25	0.25	0.7
OTC	4.13	1.94	QUARTERDECK OFFICE SYS.	2.44	-0.06	-2.5
OTC	29.25	9.50	RAINBOW TECHNOLOGIES INC.	11.75	0.63	5.6
OTC	11.38	3.38	RASTEROPS	4.25	0.25	6.3
OTC	14.50	2.88	ROSS SYSTEMS	4.50	-0.50	-10.0
OTC	28.75	3.00	SAPIENS INTL. CORP. N.V.	3.13	-0.38	-10.7
OTC	14.63	9.75	SOFTKEY INTERNATIONAL INC.	12.63	0.25	2.0
OTC	8.63	3.00	SOFTWARE PUBLISHING CORP.	3.75	0.13	3.4
OTC	13.75	5.00	STATE OF THE ART	8.13	-0.13	-1.8
NYS	35.63	21.75	STERLING SOFTWARE INC.	28.13	0.75	2.7
OTC	21.13	6.88	STRUCT. DYNAMICS RESEARCH	8.13	0.75	10.2
OTC	57.00	25.75	SYBASE INC.	43.25	0.88	2.1
OTC	20.50	9.88	SYMANTEC CORP.	12.75	-0.31	-2.4
OTC	52.75	33.00	SYNOPSYS	40.75	0.38	0.9
OTC	24.25	11.75	SYSTEM SOFTWARE ASSOC.	15.00	0.88	6.2
OTC	6.75	3.25	TRINZIC CORP.	3.50	-0.13	-3.4
OTC	30.00	11.75	VIEWLOGIC SYSTEMS	17.50	-0.63	-3.4
OTC	18.88	9.38	VISIX SOFTWARE INC.	18.50	-0.56	-5.0
OTC	13.25	5.75	WALKER INTERACTIVE SYSTEMS	7.50	0.75	11.1
OTC	60.00	24.75	WALL DATA INC.	38.25	3.75	10.9

Chicago applet provides PC backup but little functionality

By Mary Brandel

Hewlett-Packard Co. last week said its Colorado Memory Systems Division is writing the backup applet that Microsoft Corp. will incorporate into its Chicago operating system.

However, the applet is intended only for backing up individual PCs. Functionality is "bare bones," according to a Colorado Memory spokesman. "Essentially, it backs up the hard disk to any QIC tape drive," he said.

Because tapes adhering to the quarter-inch cartridge (QIC) format are the most prevalent among desktop users today, users of Windows 4.x, or Chicago, will be able to continue using their existing tapes. However, they will not be able to read Chicago tapes with Windows NT drives, or vice versa, because NT adheres to the Microsoft Tape Format (MTF).

Some say this is not a problem. Tape interchangeability is a big issue at the network level because it gives a lot more capability and security to the network administrator, said Michael Peterson, an analyst at Peripheral Strategies, Inc. in Santa Barbara, Calif. "On the desktop, I'm not sure it will be," he said.

Not good enough

But "it's certainly a disadvantage," according to Houghton LeRoy, manager of intelligent manufacturing at The Foxboro Co. in Foxboro, Mass. "I would be very uncomfortable if I were doing backup and couldn't move it to another platform."

Microsoft says it is more important for desktop users to continue using their existing tapes than to read NT tapes. In addition, Rogers Weed, Chicago group manager at Microsoft, said that most Chicago desktops will not be stand-alone but will be networked with an NT or Novell, Inc. NetWare server. In that case, they will be able to restore backed-up data across the network using built-in peer-to-peer services in NT and Chicago, despite the differences in tape formats.

In addition, users will be able to back up Chicago PCs to a server thanks to network agents built into Chicago by Cheyenne Software, Inc. and Arcada Software, Inc.

"The really new [backup] feature in Chicago is the over-the-net agents," Weed said. The agents require no new client software, although users will have to upgrade the server software.

But "you don't always have the luxury of being on a network together," LeRoy said. Or "you may have a regional office where the network connection is so poor that it wouldn't make sense to transfer large amounts of data," in which case you would need to exchange tapes, he said.

It is likely that third-party backup software will solve the format dilemma. Arcada said it plans to release full-function backup software for Chicago that will support MTF and thus allow users to restore Chicago tapes on NT machines.

Powersoft

[our customers] were crashing on a daily basis," said Tim Perkins, a consultant at a health care company in Phoenix. "Most frustrating to me is that it's so haphazard. There's no easy way to resolve some of these GPFs."

Powersoft President David Litwack responded that the company works aggressively to fix reported problems and puts out a monthly release for bug fixes. "The vast majority of problems that are reported are related to things other than PowerBuilder," Litwack insisted.

Other company officials said the upcoming release of PowerBuilder 4.0 [CW, Aug. 15], which will be unveiled this week, will address many of the general protection fault (GPF) issues inherent in the current version.

Some problems with Windows
Some developers agreed that the bugs could not all be laid at Powersoft's door. "A lot of the problems we've been having are probably Windows-related. I'm a pretty big fan of Powersoft itself," said Ryan Westling, a program manager at GTE Corp., a telecommunications firm in Thousand Oaks, Calif. He said more experienced developers know how to "work around" the problems and cited ease of development and prototyping as key benefits to PowerBuilder.

When Windows makes system calls to the underlying DOS operating system, Windows applications can bump into one another's memory space, causing a GPF and system crash that requires the user to reboot, said Rich Finkelstein, president of Performance Computing, Inc., a Chicago consulting firm. Chicago, Microsoft's 32-bit upgrade to Windows, will provide protected memory space to address these problems.

The issue with PowerBuilder, however, is that GPFs occur with much greater frequency than with other Windows tools such as Microsoft's Visual Basic, Finkelstein said. He attributed this to Power-Builder features that stretch the limit of what is possible under Windows, as well as an inappropriate design and a lack of thorough testing by Powersoft.

"You can't put enterprise solutions on a fundamentally unreliable platform," Finkelstein said.

In phone interviews last week, 10 other developers backed up contentions of PowerBuilder instability, saying they lose 10% to 20% of development time in tracking system crashes related to GPFs and then figuring out ways to work around them.

"I lost about three weeks out of the last eight months," said Ross Santos, an independent consultant working at a managed health care organization in Sacramento, Calif. "We're working on the first mission-critical application for client/server for" this organization.

Santos said he has had a work order out with Powersoft's support group since spring that seeks to address some of the problems he encountered with GPFs. "The tools are wonderful that they give you, but they just haven't taken it far enough and cleaned them up," he said.

"It could become a real problem for them."

His organization hopes to run its PowerBuilder application across a wide-area network of 14 sites and 42 servers supporting 2,000 users.

"It's supposed to be a pretty mature product, and it does allow you to do things very quickly," said another developer at a health maintenance organization who asked not to be identified. "But you stand the risk of getting egg on your face if you promote a product to do mission-critical applications and then you get stung because of these problems for which you don't have an explanation."

Some developers agreed that the bugs could not all be laid at Powersoft's door.

Few mourn DOS

cause] we're focused on Chicago," said Jeff Beyer, supervisor of the internal PC group at John Fluke Manufacturing, an electronic test equipment manufacturer in Everett, Wash.

Most new PCs ship with both Windows and DOS, and most people who have been purchasing MS-DOS by itself are Windows users, said Brad Chase, general manager of Microsoft's personal operating systems group.

Even the IBM PC Co. ships many of its PCs with Windows. "All of the IBM [PCs] we sell come with Windows, although we can order them with OS/2," said Ed Mahlum, co-owner of an Inacom, Inc. computer store in Kalispell, Mont.

Additionally, Mahlum and other support professionals said they are looking forward to the demise of DOS because it will mean fewer systems to support.

"Most of us doing tech support are looking forward to Chicago," said Mahlum, head of the store's technical sales support.

Despite such encouragement, Microsoft officials stopped short of confirming they will terminate DOS' evolution. Instead they said if users demand it, they will release further updates — but that does not sound promising.

"If people want the operating system features of Chicago without a GUI, we'll figure out how to detach the GUI," said Steve Ballmer, Microsoft executive vice president. "But they're not likely to want that."

Despite the fact that there are still millions of PCs in use that only run DOS, recent sales figures seem to confirm Microsoft's point.

"Windows is so predominant in our customers' minds that we haven't had many requests for improvements in DOS," Chase claimed.

As for Novell, Joel Diamond, technical director of the Windows User Group Network in Media, Pa., said a lot of the message traffic he has read on-line shows that many users expect Novell to terminate its DOS operating system soon.

West Coast senior correspondent Mark Halper contributed to this report.

Can IBM move OS/2 at Warp speed? Page 39.

It DOS matter to some

Despite signs of waning interest in future renditions of DOS, it will still have its place in the modern world.

For example, some users such as the U.S. Department of Defense, which has a large installed base of DOS-based machines, may still require upgrades of DOS device drivers to accommodate new devices, said Jerry Schneider, president of Schneider Associates, Inc., a Burke, Va., consultancy.

With such massive users, IBM may find a ready-made market, at least for now, for PC-DOS 7.0. The release, due out early next year, will feature a version of Workplace Shell, memory enhancements and Stacker data compression, an IBM spokesman said.

"It's unthinkable that the current release of DOS would be the last, so I think that's a great opportunity for IBM," said Priscilla Tate, executive director of Technology Managers Forum International in New York.

In fact, DOS may live on for two or more years, particularly if Chicago takes too long to catch on.

"It takes people a long time to change, so it might be a little too soon to pull the plug. And if they do, it opens up the door to IBM or someone else who wants to support it," said Cheryl Currid, president of Currid & Co., a Houston-based technology assessment firm.

—*Stuart J. Johnson*

Wysiwyg

Stupid Unix Tricks

At the Unix prompt %, type the following and Unix will supply the answer...

[Where is Jimmy Hoffa?
missing].

^ How did the sex change ^ operation go?
modifier failed

got a light?
no match

If I had a (for every $ Congress spent, what would I have?
Too many ('s

man: Why did you get a divorce?
man::Too many arguments

Source: alt.humor.puns

WYSIWYG COMPILED BY TIM OUELETTE.
DESIGN AND ILLUSTRATION BY DAVE MARSHALL

...don't write specifications.

Users should consider themselves lucky to get any programs at all and take what they get.

...don't believe in schedules.

Planners make up schedules. Managers firm up schedules. Frightened coders strive to meet schedules. Real programmers ignore schedules.

...don't eat quiche.

Real programmers don't even know how to spell "quiche." They eat Twinkies, Coke and palate-scorching Szechuan food.

Source: University of Minnesota gopher site, The Internet

Pass me the dictionary

Once "network" passed out of the realm of computer jargon and into common English as a synonym for "communicate," it was only a matter of time before "Internet" did the same: When the town of Richmond, Calif., passed a special assessment for school physical education – having spent the budgeted money elsewhere – people were angered because the meeting was not well-publicized and was held where many people could not attend. One citizen complained that this prevented the townsfolk from "internetting" with one another.

John Reynolds, Applied Materials, Santa Clara, Calif.

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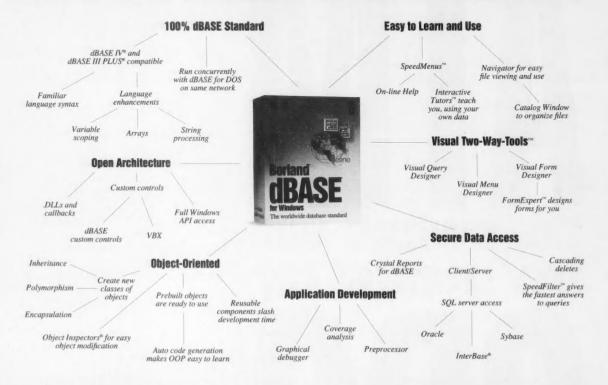
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